Aalto University
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# Success for whom?

## A probe into user experiences of online communities of interests

Master's Thesis
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**Abstract of master's thesis**

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**Abstract**

The online community (OC) plays an important role in modern people's daily lives. Successful OCs can meet users' needs for interest, relationship, fantasy, or transaction, and can create information value, experiential value, social value, or transaction value for the organizers. However, it's not easy to explain why some OCs are successful and some are not. OC success has been examined by researchers from different perspectives, such as the social perspective, the system perspective, or the organizer perspective. Studies from these perspectives have suggested that users play a key role in the success of an OC. Yet, understanding of user experiences in OCs from their own perspective was insufficient and fragmented. Most studies often presumed that the users share the same goal and perspective as organizers regarding OC success, while some empirical findings suggested otherwise.

The research aims to contribute to a deeper understanding of OC success from the user perspective. Emphasizing users' active and subjective participation, this research applied design probe to delve deeper and closer into user activities, thoughts, and emotions that traditional research methods were rarely able to.

The research yielded rich and texturized information on user experiences about OCs of interests. The research findings showed: 1) the user experience of OCs of interests is an interactive combination of various OCs, offline events, and activities around their own interests or goals, instead of an isolated experience in each OC as previous studies tend to consider; 2) users' perceived success of an OC is also based on the holistic experience around their interests or goals, instead of based on a single OC; 3) online and offline activities are interconnected in the building of users' social relationships.

The research suggests more researches of OC success from the user perspective, separate from the organizer perspective. The research also suggests future studies to aim at a clearer definition and measurement of OC success from the user perspective.

**Keywords** Online community, success, user perspective, design probe, user experience

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Bingxin Wu

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# TABLE OF CONTENTS

## LIST OF FIGURES AND TABLES

# 1. Introduction

In this digital era, many of our daily activities happen online. The online community (OC) is one of the most popular online activities people participate in, for the purposes of searching for information, work, sharing, socialization, etc.. Especially during the COVID-19 pandemic, in the face of social-distancing, the OC has played an important role for people to share information, to connect, and even to work remotely.

Successful OCs can serve users' needs for interests, relationship building, transactions, and fantasies (Armstrong & Hagel, 1996). Successful OCs can also create values for organizers, for example, information value, experiential value, social value, and transaction value (Lee et al., 2014). How to build and sustain a successful OC became a key question for both researchers and practitioners. Studies show that successfully organizing and maintaining an OC requires an understanding of some key elements like the system environment, management strategies, its stakeholders, group dynamics, etc. (Preece, 2000, DeLone & McLean, 2003, Leimeister, 2006, Chang & Chuang, 2011, Chiu et al., 2006).

Especially, the important role of OC users has drawn the attention of researchers. Theories have proposed that users play key roles in OC success. A literature review by Brogi (2018) identified the level of participation as one of the four key factors determining the OC success. It was empirically tested that factors like the number of users (critical mass), user participation, user satisfaction, sense of community, are determining factors of the OC success (Spaulding, 2010, Malinen, 2015, DeLone & McLean, 2003, Wang et al., 2015). Though, a literature review shows that existing understanding of users has mainly been gained through the perspectives of social science, system design, or organizers, while the studies of the OC from user perspective is limited and fragmented. Existing studies have often assumed that the users share the same goals as the organizers in an OC, but empirical researches have already verified that different stakeholders may have different goals in the OC (Leimeister et al., 2006). There lacks a holistic and in-depth understanding of OC success from user perspective.

Aiming to contribute to a deeper understanding of OC success from user perspective, this thesis applies design probe as a research method to gain rich data and insights into OC success through user experiences, to inform both academic studies and the practices of OC.

The first section introduces the background of this research. The second and third sections focus on the relevance of the research topic, and then defines the research objectives and research questions. The fourth section clarifies some of the terms that will be used in this thesis. The final part of this chapter outlines the structure of the study.

## 1.1. Research background

The internet has been constantly changing and reshaping our social lives. In the web 1.0 era, it supported information exchange by text. Most users sought ready-made content, usually created by professionals, and ordinary users were mostly passive (Graziani & Petrini, 2018)

The communication  Web 2.0 (O'Reilly, 2009) provided more functions that allow users to create, share, or exchange information, experiences, photos, and videos and to connect people with the same or similar interests with one another. More importantly, it created social media platforms such as Twitter, Facebook, and Instagram, where individuals' names usually appear on their personal page (Graziani & Petrini, 2018). The emphasis has been put on active users, that can interact with each other, and in particular, create communities (Graziani & Petrini, 2018).

Especially with the recent proliferation of mobile network through devices like smartphones, people can access OCs at any time and place (Zhang et al., 2013). Both the number of OC users and the functions of OCs are unprecedented. Taking China as an example, there were 40,495 million participants monthly in OCs in the first quarter of 2019 (iResearch, 2019), and the users participated in OCs for a variety of purposes like information searching, news, socialization, videos, work, entertainment, services, etc. (iResearch, 2019). The OC has become an integral part of our daily lives.

## 1.2. The relevance of the topic and the research gap

The researchers have recognized the value of the OC. Studies have been conducted to examine its social impact, business value, and the motivation behind it. One of the most studied topics is OC success. In practice, why some OCs emerge and sustain while others fail? What are the reasons behind it? How to make an OC successful?

There have been different approaches to this topic. The majority of literature about the OC can be broadly categorized into three disciplines: computer science, management, and social science (Iriberri & Leroy, 2009). These disciplines often take their particular perspectives in their studies (Iriberri & Leroy, 2009, Lehtinen et al., 2015, Kang et al., 2018). The researches of computer science often take the perspective of the system designer and focus on the application of technology in OC design (Kollock, 1996, Krichmar & Preece, 2005). Business management focuses on the business value in the forms of monetary profit, branding, and marketing. It often takes the perspective of community organizers (Armstrong and Hagel, 1995, Hoffman et al., 1995). Social science often studies the social interaction on intra-individual, inter-personal, situational, and inter-group levels (Lehtinen et al., 2015).

Regardless of their differences, the researches have achieved some common understandings of OC success. An important one of them is that users play an important role in the success of an OC. User experience is examined as multiple individual factors that affect OC success. Each discipline proposes some aspects of user experience in an OC as success factors, like user participation, user satisfaction, and (users') sense of community, but these factors are unclearly defined, thus hard to be compared or be evaluated together. For example, DeLone and McLean (2003) have suggested that user satisfaction is one of the 6 dimensions of the IS success model "…system quality, information quality and service quality had a significant effect on member loyalty through user satisfaction and behavioural intention to use the online community", which assumes user satisfaction is linked to system quality, information quality, and service quality. Though, some studies have confirmed that members can be satisfied when only the minimum technological usability criteria is met (Malinen, 2015). The researches about

which aspects of user participation are considered or how it affects OC success are fragmented and incomparable.

The latest update of user studies proposed to view user experience as holistic and participatory both in design (Mattelmäki, 2006) and in business management (Pine and Gilmore, 1998). From this point of view, the user's role in the OC is not regarded as individual factors like satisfaction, participation, or sense of community, but as a fluid experience including a series of actions, thoughts, and emotions.

In summary, users play an important role in OC success. User-centered factors like participation, user satisfaction, and sense of community have been empirically tested in various studies to be critical for OC success. OC success has been examined from different perspectives, but the researches from user perspectives are fragmented. This research argues that there exists a need to exam OC success as a holistic and participatory experience from user perspective.

## 1.3. Research question and objective

Existing studies have discussed the various affecting factors of OC success, including user-related factors like critical mass, user satisfaction, group dynamics, etc.. These studies have proposed the definition and measurement of OC success mainly from the points of view of organizers and system designers. There is a lack of integrated and cohesive description of user experience in the OC, and few studies took user perspective in defining and measuring OC success. Based on this knowledge, the research question of this thesis is:

How users of OCs of interests perceive OC success through their own experiences?

This research aims at providing an in-depth understanding and insights into OC user experience, in order to contribute to the knowledge of OC success from user perspective, in addition to existing business perspective, organizer perspective, and system design perspective. Two research objectives are set to achieve this purpose:

The first objective is to collect first-hand rich data of user experience in the OC to form a contextualized, and holistic description of user experience, in contrast to the existing view of user experience as separate factors.

The second objective is to acquire insights into OC success from user perspective, through communications with participants, data analysis, and comparison with existing knowledge about OC success.

## 1.4. Terms

There are different stakeholders of an OC. In different articles, the terms referring to stakeholders can be different. Before going into the discussion, it is necessary to clarify the terms referring to the main stakeholders who will be discussed in the thesis.

"Organizer" refers to the person or persons who organizes and monitors the activities in an OC. They can be called organizer (Armstrong & Hagel, 1996), manager (Hinds & Lee, 2008), or operator (Leimeister et al., 2006).

"User" refers to the mass of people who join the OC organized by organizers. (Iriberri & Leroy, 2009)

"System designer" refers to the person or persons who are responsible for the digital place where the OC resides (Kang et al., 2018).

Businesses can be stakeholders of an OC, for example as the owner of a brand community, or a sponsor for others' community (Armstrong & Hagel, 1995).

## 1.5. Structure of the study

The study presents the research of the above-presented question in the following structure:

Chapter one comprises the current introduction.

Chapter two includes the literature review, which moves the focus to the literature scene regarding relevant disciplines of this study: social science, business management, and computer science. The first part examines the past literature of OC studies. The second part

reviews existing theories and success factors proposed by these studies in different disciplines. The third part reviews the research methods and approaches to user experience in previous studies.

Chapter three introduces the methodology and design probe method, which are applied in this research. Because design probe has rarely been applied in the researches of user experience in the OC, this chapter has a particular relevance introducing the study's open and subjective research approaches.

Chapter four moves on to the empirical findings of design probe conducted in OCs of interests in China. The findings are presented in three topics, and discussions are made by comparing these findings to existing knowledge from other perspectives.

Chapter six concludes this thesis by summarising the conducted study and its key results, and highlighting further research opportunities.

# 2. Literature review

To understand existing knowledge about OC success, this chapter reviews the literature on the topics about the OC, OC success, and user experience in the OC. This chapter first outlines the history of studies of OC success in three stages. After that, it summarized theoretical and empirical knowledge of OC success through four perspectives: the social perspective, the system perspective, the organizer perspective, and the user perspective. Lastly, a research gap in OC success as perceived by users can be identified that leads to the research question of this thesis.

## 2.1. History of the study of OC success

The literature review aims at representing the history of studies on OC success and the achievements so far. This section briefly discusses the development of academic studies of the OC and OC success. The details of the research findings will be further discussed in the next section.

Since their introduction in the 1990', online communities (OCs) have been popularizing. The number of users, the forms of OCs, the functions of the software, and the impact of OCs nowadays have all changed dramatically (Malinen, 2015, Graziani & Petrini, 2018). Now OCs are formed around work, entertainment, consumption, and many more areas of our lives. "Online communities are dynamic, evolving, and constantly change." (Souza & Preece, 2004) The researches of OC success have also been developing. The history of the studies can be summarized loosely in 3 stages: the phenomenon stage, the theorization stage, and the verification and specialization stage. The stages are set more for the convenience of understanding the shift of focus of studies than strictly on a timeline basis.

The first stage was at the appearance of the phenomenon in the early 1990's, the studies focused on exploring the potential impact of the OC on personal or social life. At this stage, the OC was a new phenomenon. The literature attempted to anticipate the dramatic impacts the OC would be making on people's lives. WEEL inspired Howard Rheingold in his personal experience to write The Virtual Community: Homesteading on the Electronic Frontier (1993), which has lead to further studies of virtual communities. Armstrong &

Hagel (1995, 1996), and Kozinets (1999) were among the first to explore the business value of the OC. Some other works studied the impacts of internet use on individuals and society, such as social isolation, social involvement, and well-being (Carver, 1999, Jones & Rafaeli, 2000, Cummings et al., 2002, Hampton & Wellman, 2001, Kraut et al., 2002).

At this stage, the online tools available for the OC were mostly texted based like emails, bulletin boards, or list servers. (Malinen, 2015) The term "success" was often talked about in terms of meeting the users' needs of information exchange and communication. All types of OCs were very often referred to as one research subject, possibly due to the smaller diversity and number of OCs at the time.

The second stage began with the growth of Web 2.0 tools and the increased number of OC users in the early 21 century. (Kang et al., 2018) Many of the influential theoretical frameworks about OC success were proposed at this time.

Social science researchers started adapting existing social science theories like social cognitive theory (Chen & Hung, 2010, Hsu et al., 2007, Chiu et al. 2006, Luarn & Lin, 2005) and social capital theory (Chiu et al., 2006), in the studies of the OC. These theories were applied to explain factors concerning user behaviors and their social implications, like the motivation of knowledge sharing (Chiu et al., 2006, Ridings et al., 2004, Andrews et al., 2002), goals (Jung & Kang, 2010), expectations, norms, or reciprocity. The critical mass theory has been applied since the very early researches about the OC (Rheingold, 1994, Armstrong & Hagel, 1995), now it's proposed as one of the critical success factors, especially at the beginning of an OC (Preece, 2001).

In computer science and information system studies, DeLone and McLean's IS Success Model was first proposed in 1992 and updated in 2002. This model has been widely referred to while defining and measuring OC success in terms of the effectiveness of the information system. Preece (2001) proposed a sociability and usability model to guide system design to support a successful OC. These were widely referred to as frameworks in system design.

In the studies of business management, the OC was first studied only as a marketing channel (Armstrong, A. 1995, Hoffman et al., 1995, Kim et al., 2009, Casaló et al., 2010),

and later as a more important part of the branding strategy (Pitt, 2006). Marketing strategies (Cheung & Lee, 2009) and public relations skills (Toledano, 2016) were proposed to approach OC members as business customers.

Following the second stage, the third stage started with the widespread of free social platforms, digital tools, and later mobile phones. New technologies made it possible and easy for users to build or join an OC (Graziani & Petrini, 2018). At this stage, more empirical studies were conducted to test the previously proposed theories (Iriberri & Leroy, 2009). The empirical studies have researched separate factors of OC success as well as the relations of these factors. To name a few empirically tested success factors: critical mass (Wang et al., 2015, Spaulding, 2010), trust (Leimeister et al., 2006, Lee et al., 2014), sense of community (Wang et al., 2015, Qu & Lee, 2011, Kim et al., 2009), social interaction (Fiedler & Sarstedt, 2014, Lee et al., 2014, Cheung & Lee, 2009), user engagement (Brodie et al., 2013, Casaló et al., 2010, Bock et al., 2005). As importantly, quantitative studies (Baek & Kim, 2014, Benamar et al., 2017, Tsai & Pai, 2012, Zhou, 2011, Lee & Lee, 2010, etc.) were conducted to establish relations between individual success factors and the specific aspects of the OC. Take the study by Kim et al. (2009) as a typical example (see Figure 1 below).

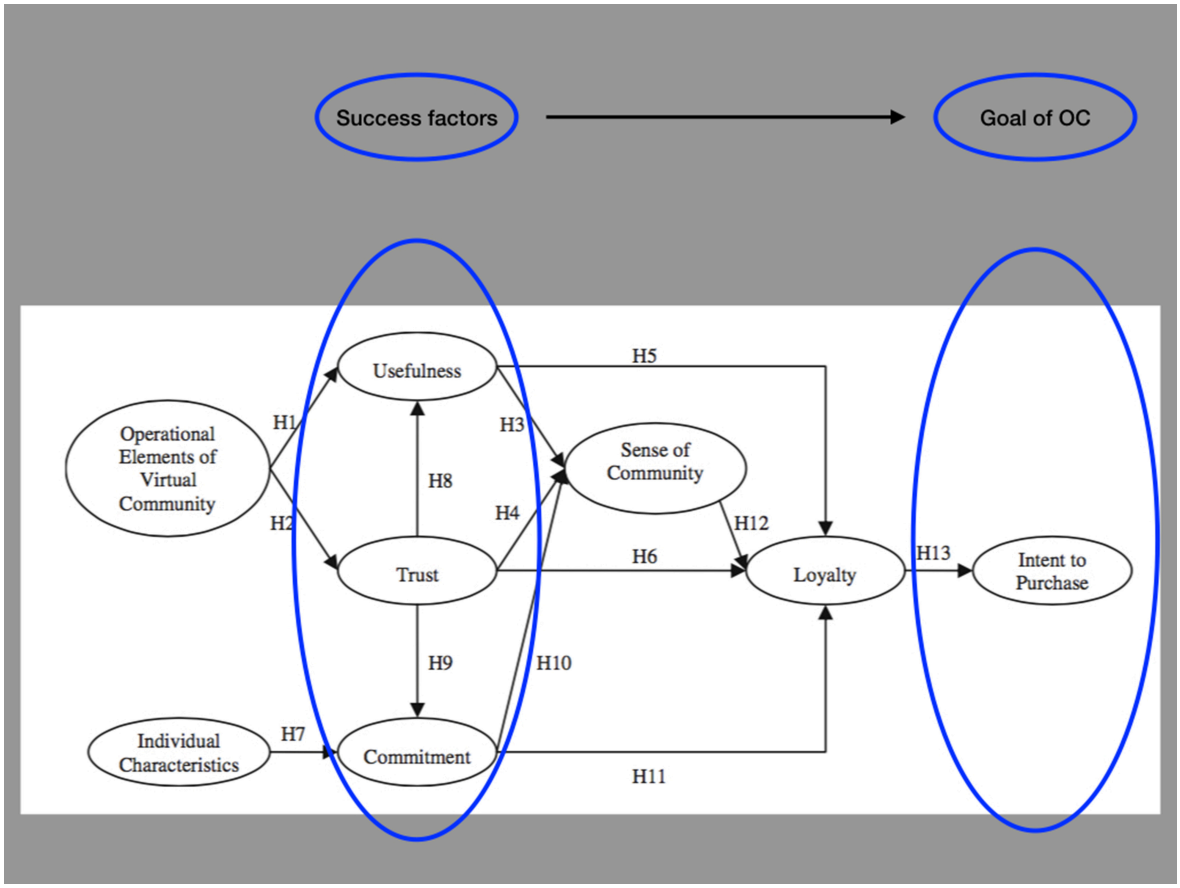



**FIGURE 1: EXAMPLE OF THE STUDIES OF SUCCESS FACTORS (KIM ET AL., 2009)**

It hypothesizes usefulness, trust, and commitment as independent variables, sense of community, and loyalty as mediating variables, and intent to purchase as a dependent variable, and verifies these hypotheses through quantitative research methods. The test results reflect how specific success factors affect certain aspects of perceived OC success, which is defined and measured in connection with the goal of the OC.

These findings abstractly explained parts of OC dynamics, which substantiated or supplemented previously proposed theories. However, there are a few findings that may significantly affect future researches of OC success. The first one is that different types of OC require different conditions for success (Chen, 2009, Hummel & Lechner, 2002, Hinds & Lee, 2008). It suggested that need-based OC types may be supportive of different kinds of member needs. Thus, need-based classification of OCs should be applied in the researches of OC success, for example, a need-based classification of 4 types of OC: interest, relationship, fantasy, or transaction (Armstrong & Hagel, 1996). The second

important finding is that at different stages of the lifecycle of the OC, OC success is supported by different factors or different priority of factors (Kang et al., 2018, Young, 2013). Iriberri and Leroy (2009) identified different critical success factors at each stage of the OC lifecycle, by summarizing previous findings (Ginsburg and Weisband, 2004, Leimeister et al., 2006, Andrews et al., 2001). The third important issue is the different views of different stakeholders. Preece (2001) has acknowledged this issue "success for who" in the discussion of her usability & sociability framework. Delone and McLean (2003) expressed the similar concern in the update of their theroy: “benefits for whom—the designer, the sponsor, the user, or others?”

The differences of the needs of different stakeholders were not clearly addressed at the time, but later studies started to investigate the differences of stakeholders regarding their needs, goals, and perspectives of OC success (Leimeister et al. 2006, Malinen, 2015, Barrett et al., 2016, Kang, 2018). The findings indicate that the difference of perspectives especially between organizers and users can have a significant effect on OC success, thus should not be overlooked. Yet, researches concerning this topic are insufficient for us to have a clear understanding of its effect. These different perspectives will be further discussed in the next section.

This section briefly went through the history of studies of OC success, explained important theories and findings, and addressed the issue of perspectives that requires further discussion. The next section will discuss in detail the differences of perspectives in the studies of the OC, and how they affect our understanding of users in the OC and consequently OC success.

## 2.2. Theories and success factors

The researchers of the OC have taken different approaches in terms of perspectives. Some are concerned about the setup of the OC and its physical and digital environment, and look at the OC as a system (Delone & McLean, 2003, Preece, 2001). Some are concerned about user motivations, internal dynamics, and social interactions, and view the OC as social communities (Luarn & Lin, 2005, Chiu et al., 2006, Hsu et al., 2007). Some researchers are concerned about the distinct characteristics of stakeholders, and take the point of view of

users, organizers, businesses, or other stakeholders (Crowson &Goulding, 2013). The combined studies from each perspective more or less form a picture of the OC from their own point of view. Figure 2 below visualizes how OLC success are perceived from different perspectives.

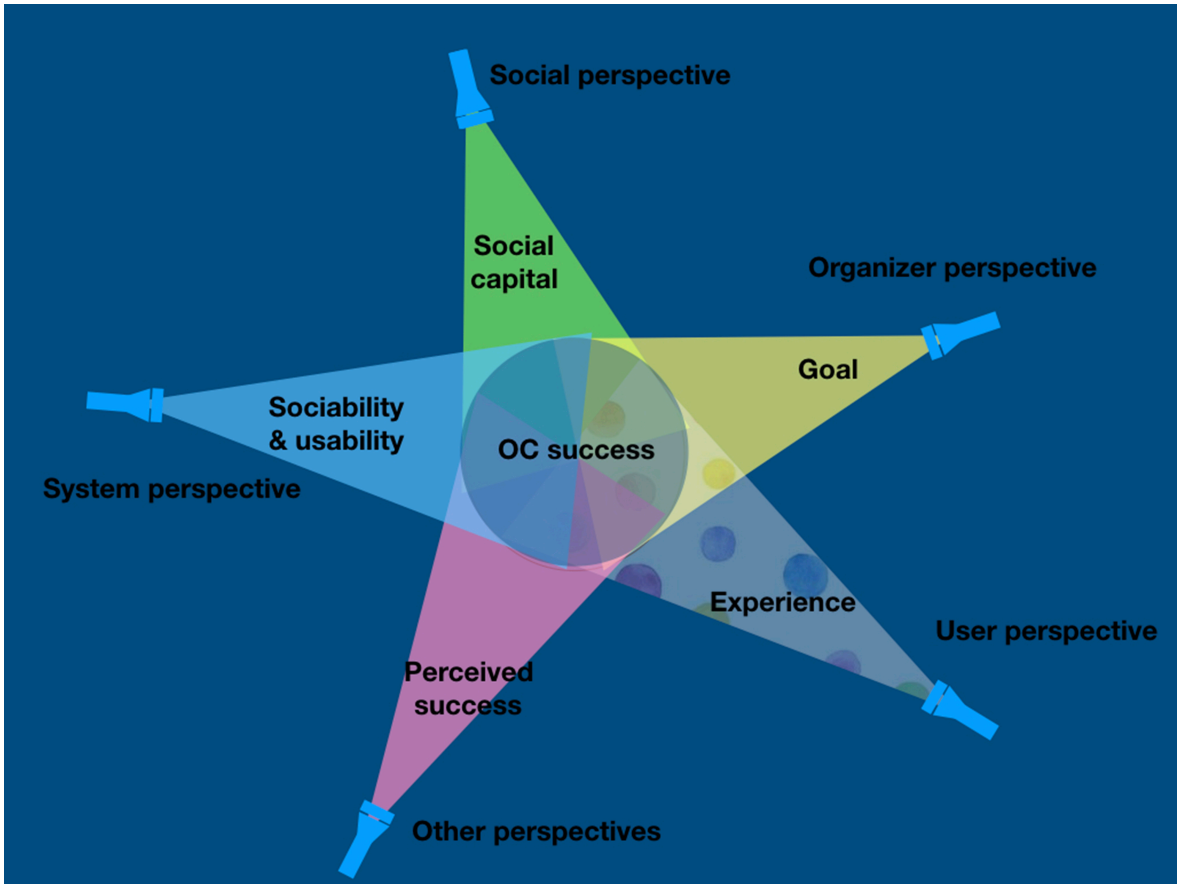



**FIGURE 2: OC SUCCESS VIEWED FROM DIFFERENT PERSPECTIVES**

This section looks into the studies regarding OC success through the perspectives they take. In terms of the number of articles, the most taken perspectives include the social perspective, the system perspective, the organizer perspective, and the user perspective. One research may take one perspective or more.

This section will discuss from each above-mentioned perspective how OC success was theorized, the empirical findings, and how the perspectives affect their findings.

### 2.2.1.The social perspective

Even though there were some debates on whether the OC has the functions of a real social community in the early stages, it has been widely accepted that the OC can be considered a form of social community (Li, 2004). Naturally, many studies adapted traditional sociological theories in the researches about the OC. The researches focusing on the social aspects of the OC can be summarized from cognitive, relational, and structural dimensions (Kang et al., 2018).

From the cognitive dimension, the researches focus on participants' motivations and behavior. (Kang et al., 2018) Social cognitive and social capital theories were adapted to investigate user behaviors (Luarn & Lin, 2005, Ridings et al., 2002) and motivations (Chiu, 2006, Galehbakhtiari et al., 2015). The studies have identified reasons why peoples join (Jung & Kang, 2010, Chou et al., 2010, Ridings et al., 2004) or not join the OC (Andrews et al., 2002), and the drives behind user behaviours such as staying, lurking, knowledge sharing, etc..

From the relational dimension, researches focus on the relations between the participants and their meanings. (Kang et al., 2018). Social capital theory (Chang & Chuang, 2011, Chiu et al., 2006, Tseng & Kuo, 2014, Lee & Lee, 2010) and the social dilemma theory (Kollock, 1997) were applied to explain interaction in the OC and the organization of the OC. These studies have suggested the relational factors or dynamics that affect OC success, including the sense of alienation (Rovai, 2015), sense of belonging (Lin, 2006), social capital (Lee & Lee, 2010), identity (Tsai & Pai, 2012), member roles (Yang et al., 2017, Baek & Kim, 2014), member dynamics (Baek & Kim, 2014).

From the structural dimension, the researches study the impersonal configuration of connections such as the strength and frequency of social interaction tie. (Kang et al., 2018). The studies have suggested structures contributing to OC success (Ahn et al., 2007, Hinds & Lee, 2008, Ganley & Lampe, 2009), and other conditions affecting OC success, e.g. the type of OC. The social structure model was proposed as success factors of the OC, and have suggested "with respect to virtual community types (needs-based), … different kinds

of social network structures may be supportive of different kinds of member needs…" (Hinds & Lee, 2008) (Ganley & Lampe, 2009)

The foundation of these theories is that individual interaction is the basic element of the OC as a social community, so the success of the OC is evaluated in terms of meeting individual needs and enhancing individual interaction. Thus, the above-mentioned researches often focus on how user behavior is affected by cognitive factors (e.g. self-efficacy, altruism, and identification), relational factors (e.g. trust, reciprocity, emotional ties, and bond), and structural factors (e.g. group dynamics and member roles), but less on what effect user behavior can have on the social factors.

### 2.2.2.The system perspective

Studies from the system perspective focus on the interaction between the information system and users in the digital space of the OC.

Preece (2000) proposed a usability and sociability framework, which is concerned with two major issues, how to design the OC, and how to support sociability. This framework took the designer's point of view, and focus on two principles of designing successful OCs "usability" and "sociability", to encompass the determining factors of OC success. This framework has been widely used as guidelines in information system design (Lin et al., 2007, Hummel & Lechner, 2002), as well as the guidance of the measurement of success (Colleen Young, 2013), or as success factors (Leimeister et al., 2006).

This framework has emphasized people's needs as one of the three key components of sociability. Preece (2001) later has proposed that user perspective should be addressed in determinants and measures of success, but the differences of user needs were not further discussed.

OC success has been discussed in the field of the information system, and one of the influential frameworks is DeLone and McLean's (D&M) Information System Success Model.

This model proposed six dimensions of success which are interrelated rather than independent. It has important implications for the measurement, analysis, and reporting of information system success in empirical studies. D&M model has wide uses in combination with theories in other fields. By combining the D&M model (system quality and information quality) and social factors (trust and social usefulness), a system impact model (Lin, 2006) was developed to exam the impact of system characteristics and social factors on the stimulation of successful virtual communities. D&M was combined with social influence theory, the uses, gratifications paradigm, and relationship marketing to explain user intention to continue using a virtual community (Cheung & Lee, 2009). D&M was also combined with marketing to explain how value is created in the OC. (Lee et al., 2014).

User satisfaction is identified as one of the 6 dimensions of the IS success model and is closely related to other dimensions in determining the success of the OC. In these models, "user" is used to include all persons who use this OC. Following the same set-up, later empirical studies applying these models were not concerned with the difference of users either, e.g. Hsiu-Fen Lin (2006, 2007) adapting both models, and Teo et al. (2003) adapting technology acceptance model (Davis et al., 1989) to verify user perceptions and behavioural intention.

The technology acceptance model (Davis et al., 1989) is another model proposed for system designers, and focuses mainly on "the measurement, analysis, and reporting" of information system Hsiu-Fen Lin (2006, 2007). This model has been used to evaluate information accessibility (Teo et al., 2003), to examine the impact of online and offline features on OC success, and to explore the characteristics of users concerning information management (Chung et al., 2010, Wang, 2016).

From system perspective, the OC is considered as an online system, which supports users' goals by facilitating the exchange of information within the OC.

### 2.2.3.The organizer perspective

The success of an online community may be viewed differently by different stakeholders in the community (Leimeister et al., 2006, Varik & Oostendorp, 2013). The key stakeholders of an OC include the organizer, the user, the sponsor, etc.. Studies from the organizer perspective are more concerned about the application aspect of the OC, especially the business value of an OC. The organizer perspective often view the OC as an organization or part of an organization. As summarized by Millen et al. (2002), the benefits of the OC to organizations include customer loyalty, employee communication and trust, visibility and reputation, and productivity. However, Kollock (1997) used the social dilemma theory to draw attention to the dilemma between individual needs and needs of the OC as a whole. Often adopting theories from social science, information system, and computer science, researches from the organizer perspective have empirically tested important success factors and their relations to OC success. In researches for organizers of commercial OCs, the OC is often viewed as a marketing and branding tool (Pitt, 2006, Tsai & Pai, 2012, Casaló et al., 2008, Kim, 2009, Lee et al., 2014). Success factors were tested in connection with brand loyalty (Kim et al., 2009) and product purchase (Kim et al., 2004, Adjei et al., 2010).

Key factors found contributing to user engagement include interpersonal trust (Hung et al., 2013), satisfaction (Casalóa et al., 2010), social and informational benefits. platform credibility (Hung et al., 2013, ) identification (Casalóa et al., 2010), sense of community (Wang et al., 2015). Studies also found structural elements that facilitate sharing (Krush et al., 2015), user engagement (Brodie et al., 2013), and have proposed strategies (Young, 2013) and actions to be taken to enhance OC activities (Varik & Oostendorp, 2013).

These studies from the organizer perspective have a strong emphasis on user engagement, and have verified important success factors through empirical studies. Unfortunately, more often than not, they presume that all stakeholders of the OC share the same interest as the organizers. This assumption may prevent researchers from discovering the real needs of other stakeholders including users.

From the organizer perspective, OC success is often theorized as meeting a group goal or user needs (Kim et al., 2000), and the researches often measure success with criteria that

promote certain user activities, such as customer loyalty (Lin & Lee, 2006), topic response rate (Arguello et al., 2006), member activity (Varik & Oostendorp, 2013, Krush et al., 2015), sense of community (Blanchard & Markus, Homburg et al., 2015), intention to purchase (Wang et al., 2015), etc..

### 2.2.4.The user perspective

As mentioned in section 2.2, many studies did not distinguish different stakeholders when discussing OC success, and have presumed that users and organizers share the same interest in the OC. Researches comparing different stakeholders (Leimeister et al., 2006, Kang et al., 2018, Barrett et al., 2016) has shown some different priorities in different stakeholders of the OC. The number of articles from distinguished user perspective is notably smaller than the afore-mentioned other categories. Yet the researches from user perspective have produced a more in-depth understanding of user experiences in the OC, and started to identify the differences of users' perspective from the organizers'.

Some of these researches have revealed more layers of success factors than proposed by previous studies, or provided new facets which were not discussed before. For example, Chen & Duh's (2009) study suggested that continuous user participation can happen regardless of the usability design of the OC, which challenges the researches from system perspective proposing usability as a solution to OC success. Hew's (2009) study suggested that diversity of views is an important determinant for profession-based communities, which was not normally discussed in previous studies. Benamar et al. (2017) identified 10 social roles in OC users. Comparing to the previous dichotomy of lurker and poster (Preece et al., 2004, Yang et al., 2017), this research explored deeper into the roles and dynamics contributing to the success of a consumer-to-consumer OC around a product. A research of the casual relations of user motivations (Galehbakhtiari et al., 2015) proposed online community participation as a complex system, which shows a new approach to the studies of user participation.

Some other studies from the user perspective also emphasized the contextualized user experience (Crowson & Goulding, 2013, Martinviita, 2016). Hamel et al. (2012) explored the success factors in specific cultural contexts, and found that lack of time is the main

barrier to participation in an Inuit OC of practice, which was a rarely discussed factor. A research on homosexual males in the OC proposed that success factors can be paradoxical or have both positive and negative effects at the same time ( Crowson & Goulding, 2013).

These researches from user perspective may discover new aspects, or allow deeper understandings of certain issues. Though, these researches are few and fragmented. There has been no systematic approach to define and measure OC success from the user perspective.

## 2.3. Conclusion

This chapter has first reviewed the development of OC studies. It then reviewed literature about OC success from the social, system, organizer, and user perspectives respectively. Existing theories tend to propose to consider individual factors contributing to OC success, and study the relations among these factors. Empirical studies have verified key success factors, such as user participation, critical mass, sense of community, etc. Even though active user participation has been identified as a key component to any successful online community (Malinen, 2015), fewer articles took the user perspective in the studies, and the understanding of user experience has been fragmented.

In summary, this chapter reviewed existing literature about OC success from different perspectives. The social perspective views the OC as a social network and the sustaining of such a network is achieved through the creation and exchange of social capital (Chiu et al., 2006, Chang & Chuang, 2011). The system perspective theorizes that OC success is supported by the design and management of the OC as a system. The organizer perspective views OC success as an organization for a shared goal, thus success is to reach a set goal. This research theorizes that from user perspective, OC success is perceived by users through their own experiences. Thus, this research looks deep into user experience to gain knowledge of OC success from the user perspective.

Based on the previously established research question and the literature review, the next chapter will introduce and justify the research methodology and methods.

# 3. Methodology

The purpose of this chapter is to justify the research methodology and introduce design probe as a research method. This chapter first outlines the constructivist paradigm in which this study is conducted. Secondly, it introduces design probe process and justifies why it is the appropriate method for this research. Following it, detailed information on the research schedule and process are presented. Before the end, ethics and credibility issues of this research are discussed.

## 3.1. Philosophical paradigm

To answer the research question "how users of OCs of interests perceive OC success through their own experiences", this study is set to explore user experience from the user's point of view. The assumption of the study is that OC success could be seen differently from different stakeholders' points of view, and the perceived OC success is based on a holistic experience which involves the user's subjective input and the context of the experience. This assumption suggests that this research takes a constructivist approach. "Constructivism, as a paradigm guiding the practice of research and evaluation, emphasizes the central influence of multiple perspectives, contextual factors, and value systems in the development of knowledge." (Fram, 2014)

According to Denzin, N. K., and Lincoln, Y. S. (2011), in the constructivist paradigm, it is considered that the nature of knowledge is local and specific, and is co-constructed. In addition to seeing the world as a social construction, the constructivist acknowledges that the researcher is part of the social world thus having an impact on the research results (Bryman & Bell, 2007). Constructivism suggests that knowledge is subjectively accumulated and co-created by the observers and/or participants. Within this paradigm, data of users' daily activities, thoughts, and environments are considered appropriate sources for a deeper understanding of user experiences. The knowledge of user experience is acquired through users' self-documentation, communication between the user and the researcher, and data interpretation by the researcher.

Due to the qualitative nature of this research, design probe is applied in this research. Design probe is an approach to investigate "user experience from the perspective of user-centered concept design. " (Mattelmäki, 2006). But on top of the purposes of other qualitative research methods, design probe emphasizes inspiration, user participation, and dialogue with users. In the next section, it will be discussed in detail the advantages of design probes that can help to generate new information and insights that may not be achieved through other methods.

## 3.2. Design Probe as a research method

This section discusses why design probe was chosen as the research method.

B. Gaver et al. first introduced cultural probe in 1999 as a design research method, to gain a deeper understanding of user needs in their cultural context. The traditional methods like survey, questionnaire, and interviews are better at confirming known entities, for example, verifying specific success factors of proposed theories. These researches typically produced knowledge about the masses of people (Mattelmäki, 2006), but seldom go deeper to discover the user's motive, value, or vision.

"Probes are a collection of assignments through which or inspired by which the users can record their experiences as well as express their thoughts and ideas." (Mattelmäki, 2006). Participants are asked to keep diary-like documentation, and to complete tasks like taking photos, making maps, or answering open questions.

Design probe has distinct characteristics compared to traditional qualitative research methods. There are three features of design probe that will benefit this study by supporting the discovery of the user experience: user's active participation, user perspective and context, and its explorative character. First, it has a strong emphasis on users' active participation, not only answering questions, but also reflecting and ideating. For example, they can be asked to write down things they wanted to change or improve (Wherton et al., 2012). Secondly, the probe looks at the user's personal context and perceptions while completing specific tasks, like making psycho-geographic maps. And lastly, it has an

explorative and experimental approach, for example, crude prototypes were sent to users without clear instruction so that the users can make their own explorations (Gaver, 2007).

The first two features rely on the application of self-documentation. Below are three advantages of self-documentation.

"Firstly, it is a way of collecting data from several situations which is thought to give a more credible and reliable idea of a person than recording just one situation by means such as observation." (Mattelmäki, 2006).

"Secondly, it is an attempt to minimise the observer's possible influence on the person observed (Mattelmäki, 2006). " In the case of an observation method, the researcher's presence during the user's experience may alter the user behavior, or be inappropriate such as taking photographs in some situations.

The third advantage of self-documentation is that "Self-documentation can record context-related experiences as they occur, minimising retrospection (Mattelmäki, 2006)." The user's experience is documented the earliest when the user has the opportunity or as a diary, so it is recorded in a more genuine form than interviews afterwards which has a bigger chance of being distorted or contaminated. Using self-documentation, the user's action and thoughts and recorded in their context and from the user perspective.

The third feature of design probe relies on its openness in approaching users, the design of probe assignments, and the interpretation of probe material. With this open approach, the design probe allows users and researchers to explore new perspectives or insights. The details of this open approach will be presented later in the application of design probe.

Other researchers have adapted Gaver's cultural probe (Gaver et al. 1999), and made different applications of design probe as a research method, for the purposes of inspiring design, collecting information, invoking user participation, or creating dialogues between users and the design team.

This probe is intended to meet the more particular aim of supplying information to inform the studies of OC success. While inspiration would undoubtedly be important for the

generation of information, the prime concern is informational – a matter of gaining insights into how participants use OC, their everyday circumstances when using the OC, their routines and rhythms, their practical concerns, and so on.

Design probe has its limitations. Since it focuses on individual experiences where the sample groups are often small, it may not be representative of general users. This research is faced with such a limitation. This research has collected the initial 6 documentation of the 7 participants. One of them couldn't do the documentation due to the time availability issue. Another three of the initial documentations had very little information, and the participants couldn't participate in the interviews also due to time issues. Another participant provided comparative little data related to the OC both in the documentation and in the interview. Thus, in total only two of the seven participants completed the probe process and provided the majority of the research data. However, qualitative researches including this design probe aim to describe and understand the phenomenon and individual people (Silverman 2000). As little as one individual is sufficient to point out a need or a potentiality to base the concept on (Mattelmäki, 2006). These two participants have provided rich data and deep insights, which drew detailed and expansive pictures of their experiences. In the next chapter, the discussion of the main findings of the research will focus on their experiences, while the other data were informative and supplemented the main findings.

Another concern of design probe is that it has a strong emphasis on users' subjective input, where the data might be exaggerated or one-sided. (Mattelmäki, 2006). It is suggested not as an alternative to traditional research methods, but a complementary and fun addition to them. This research is built on the fact that an abundance of quantitative and qualitative data of general OC users have already been collected. So instead of rebuking or verifying previous research results, this study is meant to build on the findings of previous studies, and to apply design probe to explore a new angle.

In this section, the reasons why design probe is applied in this research were discussed. Comparing to traditional methods, design probe facilitates more in-depth exploration into users' experience with stronger user engagement, and self-documentation of design probe allows a contextual and closer-to-reality account of user experience.

## 3.3. Research setting

"The research setting can be seen as the physical, social, and cultural site in which the researcher conducts the study." (Given, 2008) This section discusses these conditions in which the design probe is conducted.

A study by Grace-Farfaglia et al. (2006) suggested that individual values behind online participation are influenced by national cultures and online subcultures. The design probe was conducted in the Chinese city of Chongqing. Chongqing is the sixth biggest city in China, situated in the southwest of China. The cultural context of this study can be arguably generalized to be representative of big Chinese cities.

Previous studies have suggested the usability and sociability design of online spaces are the determinants of OC success (Preece, 2001). The OCs in research are closely connected to social media or platforms, because they have to be situated or organized in one of these online spaces. In terms of the online environment, China has very different social media and platforms from many other countries. The popular international social media like Facebook,  Twitter, or Youtube are not accessible to the mass population in China. The most popular social media or online community platforms in mainland China are Chinese websites or applications like Weibo, Wechat, or Douban. Even though the participants were requested to document any OC of interest they choose, the OCs studied in this research are unlikely to reside in any of the international social media like Facebook,  Twitter, or Youtube. The documented OCs will be introduced in detail in the findings chapter.

Besides external conditions, the research population of this study is also framed in the OC of interest as a type of OC. Since Hinds and Lee (2008) suggested, needs-based OC types may be supportive of different kinds of member needs. A needs-based classification of OCs suggests 4 types of OCs: that of interest, relationship, fantasy, or transaction (Armstrong & Hagel, 1996). This research chose to focus only on users of the OC of interest.

## 3.4. Research process

The research process included four stages: preparation, designing the probe kit, probing, and interpretation of the documentation. In this section, the process is introduced step by step, and research methods are justified at each stage.

### 3.4.1.Preparation

The first step of preparation was to define the objectives of this probe. The objective of this probe was to gain an in-depth understanding and insights of user experience through the participants' self-documentation and their communication with the researcher. The second step of preparation was to make a preliminary mapping of the knowledge already acquired (or to construct a preconception).

The preliminary mapping accumulated the knowledge from several sources: literature review, personal experience, ideation, and interviews with experts/key persons. It outlined the knowledge of the OC in a few aspects: the value of the OC, success theories proposed by different disciplines, success factors, and perspectives of different stakeholders. This preliminary mapping served two purposes. First, it informed the probe design, especially when constructing the instructions of research. Secondly, when the things already known were documented before the study, it helped to distinguish new insights resulted from the research, or to see familiar things in a new light (Visser et al. 2005). In chapter 4, the findings of the research will be analyzed and justified against the knowledge in the preliminary mapping.

To gain access to the OC information and the opportunity to recruit participants, the researcher became an active member of a few OCs of interests. It is worth mentioning because it poses ethical concerns and credibility concerns of the research, which will be discussed in sections 3.5 and 3.6.

The recruitments happened between Sep. 19, 2019 and Oct. 06, 2019. The researcher introduced the study and recruited in ten online or/and offline communities. The total number of the community members was over 945, while the number of members in each OC ranged from 6 to 415 people.

This research applied a purposeful sampling method (Creswell & Creswell, 2018) because it allowed for the selection of participants who have related experiences. "As little as one individual is sufficient to point out a need or a potentiality to base the solution concept on". (Mattelmäki 2006) It is not meaningful to choose a large target group for a probe study. As suggested by Mattelmäki (2006), this research targeted 5 to 10 participants. The probing schedule is included in Appendix 1 at the end of the thesis.

This section introduced the preparation stage of design probe and its sampling method. The probe design has started simultaneously with the recruiting process.

### 3.4.2.Designing the probe kit

After the preliminary mapping of knowledge and sampling at the preparation stage, the researcher started the probe design stage. Decisions needed to be made on what tasks were to be completed, what questions were to be asked, and the steps of sending and receiving the probe kit.

Probe kits have typically included a diary, a camera, a set of questions and tasks in the form of, e.g., cards and maps (Mattelmäki 2006). The probe kit designed for this research includes the below items: (For an example of a probe kit, see Figs.)

A diary book is a journal-like book with pockets for different accessories. It is both a notebook and an all-in-one package for all tools of the probe.

Stickers work as stimuli, to inspire participants in their documentation.

Postcards have questions at the back. They are both probing questions and a reminder of what to document.

Last envelope with the suggestion of a small gift to encourage the user to have the follow-up interview with the researcher.

Figure 3 below shows all components included in the design probe kit.

**FIGURE 3: PROBE KIT DESIGN**

With these tools, three major tasks were to be performed by the participants.

The first and most important task was the self-documentation of a two-week period. The self-documentation of design probe emphasizes encouraging and inspiring users' active participation and imagination. To achieve that, the researcher had to frame the tasks of self-documentation and the questions in an open way. A letter of research instructions is included in the design kit. The content of the letter of instructions is attached in Appendix II. In the research instructions, the participants were asked to keep a diary of their activities or thoughts related to the OC they join. It was emphasized that the only requirement was that the content of the diary was related to the OC of interest. To any question whether specific content should be documented, the answer was always "if you think it is important/interesting/useful or for any other reason you want to write it down in a diary, document it as you like." It gave the participants the freedom to write down activities or thoughts based on their own concerns or priority.

In addition to diaries, photographs were used as a complementary way of documentation. The photos taken by participants produce a personal view, and can provide details about the environment Gaver et al. (1999). In this research, the users' own smartphones replaced disposable cameras. The reason is the accessibility of the cameras of smartphones. The chance of carrying a mobile phone anywhere at any time is much higher than carrying a camera.

There were various stickers in the probe kit. These items included timestamps of each day, to remind the user to document, emoji stickers to help users to express their emotions,

dialogue tags to facilitate the documentation of communication between participants and others, and some random stickers for inspiration.

The second task was to describe two occasions of user experience: what is your best/worst experience with OCs of interests? The questions were written at the back of two postcards. Because postcards are an attractive medium (Gaver et al., 1999), they are intended to inspire the participants to reflect deeper into their experience and to explore how and why these were best/worst experiences.

The third task was to draw a map of their social relations related to their OCs. Maps have been used in design probes to help expressing geographical environment as well as thoughts, eg. psycho-geographic maps (Gaver & Dunne, 1999). It was intended as a tool to let participants reflect on their relationship with other users or organizers of the OCs, and how they navigated their activities in the OCs.

All the above-discussed tools were packaged together as a probe kit, which was distributed to each participant at the beginning of the probing stage.

The second and third stages of research, reaching out to the target group and probe design, happened almost simultaneously, because the probe design was constantly updated according to the feedback from the recruiting practice. In this research, the typical cultural probe kit of previous studies was used as a starting point, and modifications were made to adapt to the current situation after each communication with participants.

### 3.4.3.Probing

The probing (data collection) stage included two parts. The first part was collecting data through a probe kit, and the second part was the interview with the participant. This section discusses the process and details of probing.

As mentioned in section 3.4.2, the researcher approached OC users in Sep. 2019. Seven users responded to participant in the probe. The probe kits were distributed to participants between Sep. 19, 2019 and Oct. 06, 2019. Each participant started performing the tasks as requested by the instructions in the probe kit from the day they receive the probe kit.

During the two weeks, the participants and the researcher kept contact. Each set of probe materials were returned after two weeks, and the last probe materials were returned on Oct. 24, 2019.

When the participants completed probe tasks and returned the materials, the researcher scheduled an interview with each participant. The purposes of the interview were for the researcher and participant together to clarify the content of the participant's documentation, as well as to extend, supplement, and revise the information collected in the probes.

For these purposes, before each interview, the researcher had read all the probe materials to form a preliminary understanding of the documentation and to take notes for the follow-up interview with the participant. When the interviews were completed successfully, the probing stage came to an end.

### 3.4.4.Data interpretation method

Design probe collects data of participants' daily lives through probe materials and interviews. The researcher studies these data and forms her own understanding of the data at the data interpretation stage. This section discusses the method to interpret and analyze these data.

Mattelmäki (2006) has suggested the three-stage interpretation method (Visser et al., 2005) for handling probes seeking knowledge. This section introduces the data interpretation method in three stages. Figure 4 below demonstrates the process with examples of the notes.

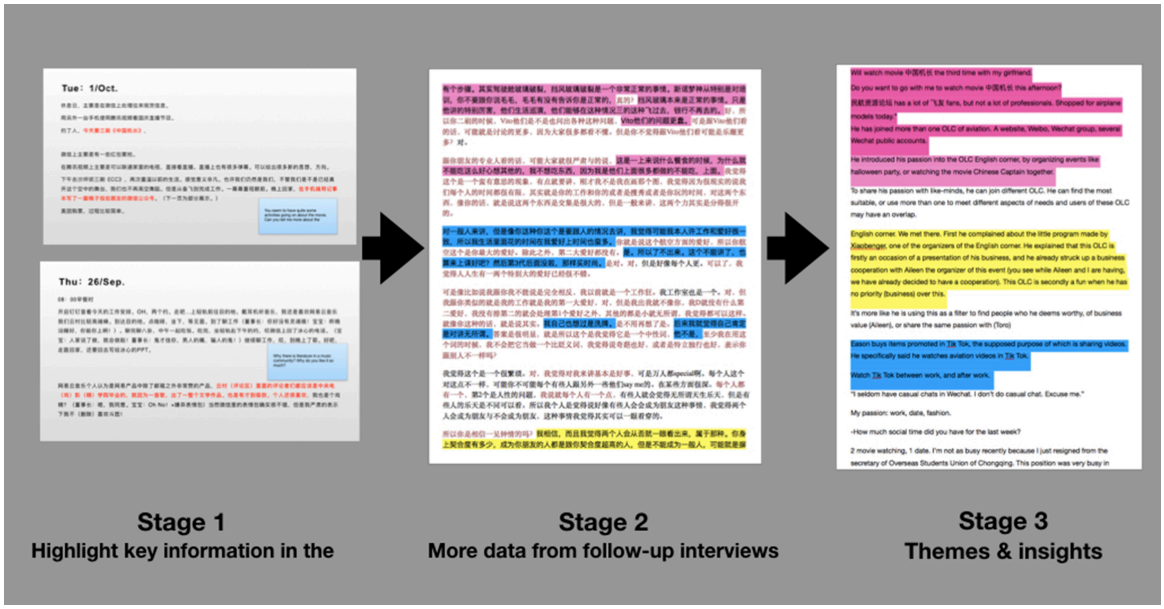



**FIGURE 4: DATA INTERPRETATION PROCESS**

The probe material can be interpreted as qualitative research by looking for clues, similarities, and differences to facilitate understanding of the subject. Before the interpretation, the raw data needed to be transcribed. The participants are all native Chinese speakers. Some of them used the Chinese language in their documentation, and the interviews were all conducted in Chinese. The original probe materials were first stored in their original format. Then audio files were transcribed into Chinese texts. The interpretation process was done in the Chinese language. When the interpretation is completed, the results were translated into English. All the translations were conducted by the researcher, who has a certificate of professional translation.

The first stage of data interpretation was to focus on the primary data. The researcher reviewed all materials to form a thorough understanding, then took notes, and highlighted important texts. This stage started when the probe material was returned. Each set of returned probe materials was reviewed and interpreted. The researcher took notes of insights and wrote down her interpretation, as well as follow-up questions regarding the participant's materials. After the researcher formed her own understanding of the materials, she arranged the final interview with the participant. The final interview focused on promoting the participant's further description and illustration of their experiences by

asking follow-up questions. The new materials were combined with the first materials to be reviewed and interpreted.

After the raw data and first insights were captured, the second stage was to search through the information for interesting indicators. In this step, the researcher asked questions like what topics, why, what to discover in the association of contents. The researcher was prepared and surprised by layers of information to be discovered. All the impressions and insights were written down.

The last stage was to form an overview and to find patterns. In the search for a variety of patterns, all the annotations and the data were organized and re-organized. The researcher looked for recurrent and/or striking topics or phenomena to generate findings. Finally, some findings were presented in the form of a story-like rich and thick description. The findings will be discussed in the next chapter.

## 3.5. Validity and reliability

Researchers need to convey the steps they will take in their studies to check for the accuracy and credibility of their findings. This research follows a guideline proposed by Creswell (2018). Creswell suggests using multiple validity procedures to enhance the researcher's ability to assess the accuracy of findings as well as convince readers of that accuracy. This research uses three validity procedures, and two reliability procedures proposed by Creswell to ensure the accuracy and credibility of the research.

The first validity procedure is member checking. At least one interview was arranged with each participant to clarify their probe material. During the interview, the researcher summarized her understanding of the documentation, and clarifies points where she has questions. At the end of each interview, the researcher would summarize the interview and confirm its accuracy with the participant. After having completed data interpretation, the researcher confirmed with all participants the key information of her interpretation.

The second procedure is a rich and thick description. This applies at two levels. First, this thesis gives a thorough description of the research setting, which increases the validity by

forming a contextual background for the findings of the research. Secondly, the thesis made a detailed description of the findings, which make them more realistic and richer.

The third procedure is to clarify the bias the researcher brings into the research. In this probe, the researcher is involved in a sustained and intensive experience with participants. This introduces a range of strategic, ethical, and personal issues into the qualitative research process (Creswell & Creswell, 2018). To explicitly identify reflexively the researcher's biases, values, and personal background, is a way to justify this issue. Firstly the researcher chose this research topic out of her personal interests. She had participated in various OCs of interests as a member as well as an organizer, but had seen many cases of conflicts and failure. This may potentially cause the researcher to lean toward the notion that known success models do not inform practices, and the participants and organizers have different or even conflicting interests in the OC. Another aspect of reflection is on the relationship between the researcher and participants. By taking notes of observations about the process of data collection, insights, and concerns about the reactions of participants to the research process, the researcher can clarify this bias. Sufficient reflexivity occurs when researchers record these notes during the process of research, reflect on their own personal experiences, and consider how their personal experiences may shape their interpretation of results. (Creswell & Creswell, 2018)

As for reliability, this study adopted mainly two reliability procedures as suggested by Creswell (2018) to be applied to qualitative researches. The purpose of these procedures is to ensure that the approach of this research is consistent across different researchers and among different projects (Gibbs, 2007).

One is to document as many of the steps of the procedures as possible (Yin, 2009). This study documented in detail every step of the preparation, design, probing and data interpretation processes.

The other reliability procedure is to check transcript mistakes (Creswell & Creswell, 2018). The researcher has double-checked all transcript, and confirm the key information of the transcript with the participants.

## 3.6. Research ethics

Doing and reporting research is a social activity with ethical implications (Creswell & Creswell, 2018). Anticipating and writing about ethical considerations is a part of an academic argument. In this section, the researcher reflects on the ethical considerations that this study has followed through the process. The particular ethical challenges of cultural probe are also addressed.

In general, the research has followed four widely accepted ethical principles in scientific research summarized Bhattacherjee (2012). Detailed ethical considerations concerning participants are addressed in the Research Instruction.

First of all, the research should be voluntary and harmless to participants. This is ensured through informed consent. A letter of informed consent is included in the probe kit. The content of the letter of informed consent is attached in Appendix III. In the research instructions, the participants are informed that they have the freedom to withdraw from the study at any time without any unfavorable consequences. The researcher has acquired written or verbal consents from all participants.

To protect participants' interests and future well-being, anonymity, and confidentiality rules are followed. Anonymity is concerned about the participants' identity, and confidentiality is concerned about who has access to the research data and if these data can divulge the participants' identity. In the research instruction, the participants are informed that they can choose to use their real name, pseudonym, or to remain anonymous in the research. The research process, storage, and use of research data were stated in detail in research instruction.  In the research, the researcher would ask for participants' consents if their conversation can be recorded.

To physically ensure the safety of user information, the data were stored by the researcher in her personal password-protected computer, and the data would be viewed by the researcher and Aalto University employees who are evaluating the research. The data will not be given to any other parties without the explicit consent of the participant. The thesis based on these data will be public online, without violation of previous anonymity and

confidentiality rules. If the participants withdraw from the study after being interviewed, their data will be retracted from the study and destroyed.

Researchers have an obligation of disclosure. In this research, a brief introduction of the purpose of the research, the researcher, and the probe is stated in the instructions. The contact information of the researcher is provided to allow participants to ask questions regarding the research.

Researchers have ethical obligations in the analysis and reporting of researches. This research report all findings truthfully to the researcher's knowledge, including unexpected or negative findings, even if they cast some doubt on the research design or the findings.

Besides general ethical rules, there are some particular ethical challenges presented by design probes. For design probes, the insights or findings of the research are often presented in rich descriptions, for example, story-telling. Unlike numbers or yes-or-no answers, stories here can be very specific or personal. It raises the ethical questions: to what extent does revealing the participants' story compromise their privacy (Gaver, 2007). In this research, besides following general rules and common sense, the researcher chose to consult the participants' for their consents.

Another ethical challenge of this research is the anonymity in visual researches. Design probes collect photos, screenshots, and other visual data from participants to enrich the information of user experience. Two approaches were taken in this thesis to maintain the participants' anonymity. One is to use photographs with no figures (Crow & Wiles 2006), the other is to choose photos in which people's identities are more concealed than revealed (Crow & Wiles 2006).

## 3.7. Conclusion

This chapter introduced the methodological approaches to this research. Firstly, constructivism was introduced as the philosophical paradigm guiding the practice of research and evaluation, emphasizing the central influence of multiple perspectives, contextual factors, and value systems in the development of knowledge. Secondly, it was discussed why design probe is applied to collect research data. Design probe applies tools

like self-documentation with strong user engagement, to gain a contextual and closer-to-reality account of user experience. In the third section, the physical, social, and cultural settings were introduced as the context of the research. Then the probe process was discussed in four steps: preparation, probe design, probing, and data interpretation. The details and purposes of each step were justified. Cultural probe method is adapted as a data collection method, and a three-stage qualitative data interpretation method is applied to handle the probe material. Before the end, credibility and ethics concerns were discussed.

# 4. Finding and discussion

In previous chapters, it was discovered that there is a lack of researches on perceived OC experience from the user perspective. This research applied design probe method to collect data of user experience in OCs of interests. Rich information was collected from the probe materials returned by the participants, as well as from the interviews and communications between the participants and the researcher. Figure 5 below shows different forms of returned probe materials. Figure 6 shows some of the notes taken in the follow-up interviews.


**FIGURE 5: RETURNED PROBE MATERIALS, IN THE FORMS OF AUDIO FILES, POWERPOINT FILES, AND THE NOTEBOOK**

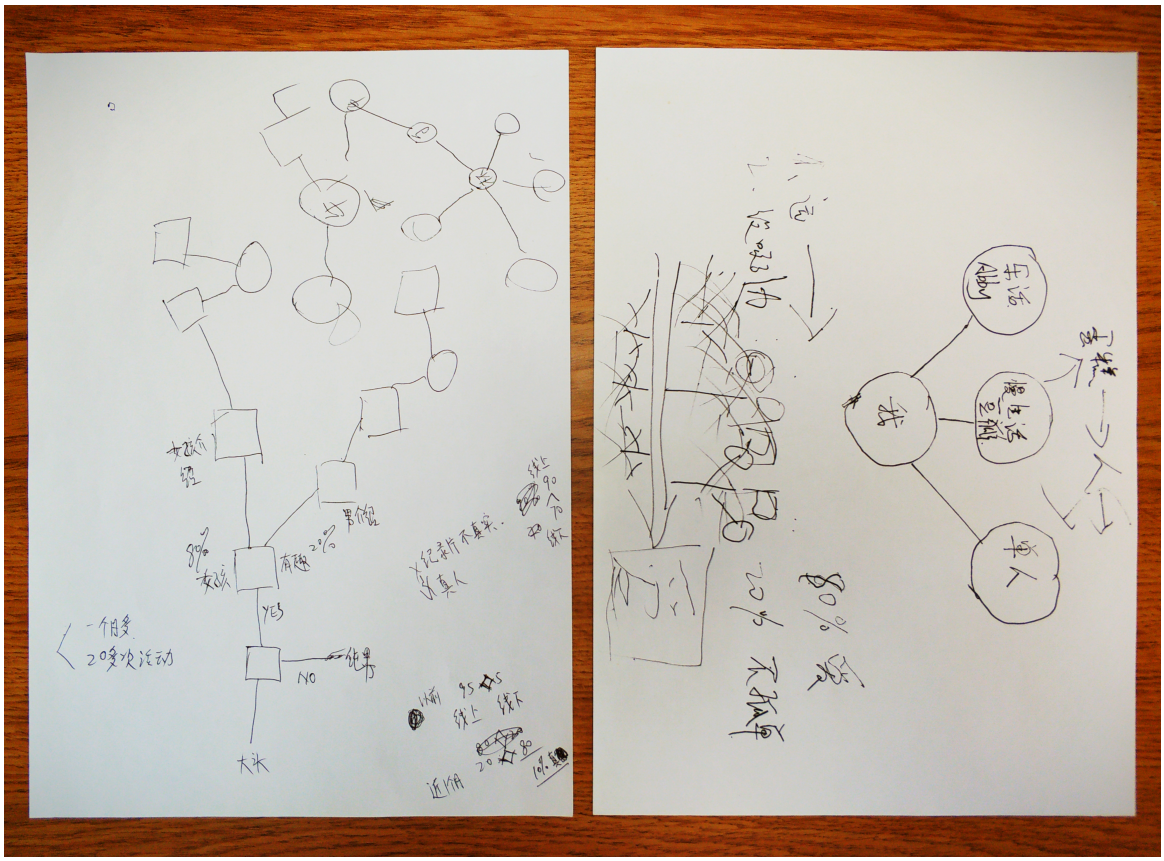



**FIGURE 6: NOTES FROM THE INTERVIEW WITH BRIAN**

Based on these rich materials, the researcher has developed a deeper understanding and insights into the user experience in the OC from the user perspective. The research findings together suggest a holistic view of user experience in and outside of the OC.

This chapter presents the research findings in rich details, and discusses their implications by comparing them to previous literature. The research findings are grouped into three topics to provide more specific question areas with which the research question could be answered. The three topics are perceived user experience, perceived success, and offline activities. Each topic is presented and discussed respectively in one section, supported by deeper analyses and insights into the topics. A critical discussion is made after the findings, by analyzing and comparing the findings to the earlier reviewed literature. The fifth section discusses challenges and opportunities for the application of design probe method in the researches of user experience. This chapter is concluded with a summary of the research findings and discussions.

## 4.1. Topic one: Perceived user experience

One of the main principles of this design probe was to be open about participants' choices of the OC they want to record and discuss. The participants chose whatever OC they want to talk about. In the discussion, one phenomenon stood out:  the participants' perceived experience in one OC often can not be isolated from other OCs or other activities. The participants talked about their experiences around their interests or goals instead of one specific OC. The below sections will discuss cases in which how the participants view their experiences, in and outside of OCs.

### 4.1.1.The OC of aviation

For a participant Allen, aviation is his biggest interest, "my passion" (Allen). He does various activities related to this interest, including joining multiple OCs. First of all, it is his career. He used to work as a flight attendant, and now he works in an aviation safety company. It is also a source of entertainment. He joined several OCs of interest about aviation, and was a frequent user of these OCs. Figure 7 shows the aviation-related OCs and activities in which Allen has participated.

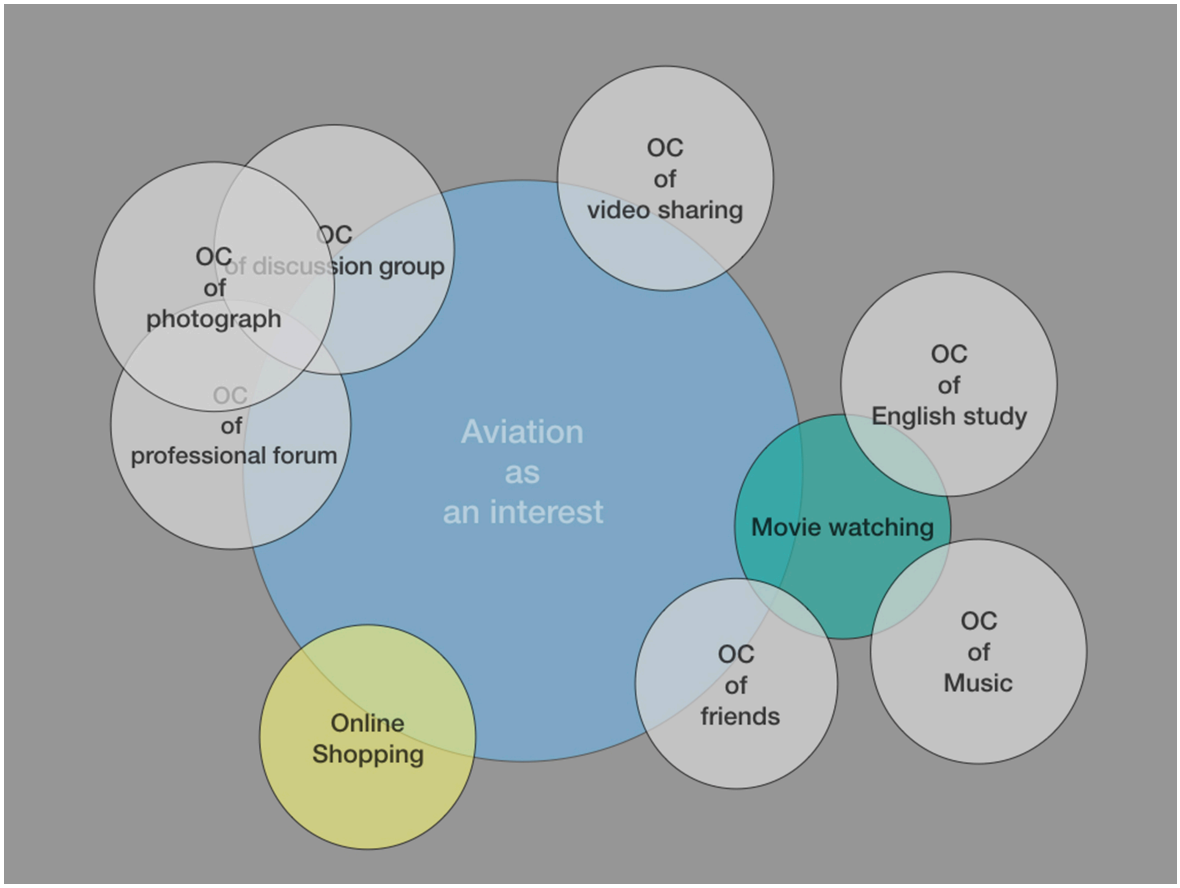



**FIGURE 7: PERCEIVED USER EXPERIENCE AROUND AN INTEREST**

In Weibo, there is a group of people who are interested in taking photos of airplanes, who call themselves Feiyou (meaning flying friends). In their OC (OC A) in Weibo, they trade photos, share their experiences and tips. Allen sometimes joins the discussion as an expert to give some advice and enjoys his role in the OC. "I sometimes point out their mistakes. And they call me a guru." (Allen) The interesting part is that the name Feiyou is not only used in the OC in Weibo. Allen mentioned Feiyou in different OCs. Another OC (OC B) Allen visits is a forum for more professional discussions about aviation, where some Feiyou from OC A also visited. He went to professional forums to enjoy being among his professional peers, and he goes to the OC of airplane photographs to enjoy the more casual discussion and being the expert in the group. These two communities share some of their members because of their partially shared interest, but they are different because "Feiyou do not understand some of the discussions on the professional forum".

Allen also likes collecting airplane models for personal enjoyment, and watching aviation-related videos in Tik Tok (video sharing app). Each of these activities and OC may focus

on a different aspect, they are interconnected by the shared topic of aviation. Allen's description of his experience in any of these activities or OC has inevitably involved the other activities or OC. For example, "I sometimes share the video I see in Tik Tok to my Feiyou friends." This interconnection can be more vividly demonstrated in one movie-watching experience. There was a movie called The Captain, which was based on a real story of a Chinese flight accident. Allen talked about his experience of this movie which lasted a few weeks. When the movie was screened in 2019, Allen was very excited. Prior to watching the movie, he downloaded the movie soundtrack from his favourite music app Netease music. Then, he arranged to watch the movie several times with different groups of friends. One group of friends were his professional friends like pilots, air traffic control, flight attendants, etc. Another group included other non-professional friends he invited from other groups. He described excitedly his experiences on both occasions. In the professional group, "we watched quietly through the whole movie", and had intense discussions about the technical details of the movie after watching. "I thought: it was a really good production. We should write a movie review." So a friend and he together wrote a devoted movie review to be published in a Wechat public account. At the same time, he had a lot of fun watching the movie with his non-professional friends, "It was so funny that Ivan kept asking me questions throughout the movie", and he happily played the expert role to answer the questions and explained the technical details. "… then Ivan kept asking 'Allen, did you meet this kind of situation?'… WTF! if I met this situation, I wouldn't be here now, ok?" (loud laugh) It's safe to say both his friends and he enjoyed watching the movie together.

The same applies to Allen's experiences in different OCs, where both information and relationships crossed the boundaries of different groups. Information was shared in different OC: knowledge from the professional OC was shared in the non-professional OC; videos from Tik Tok were shared with professional and non-professional friends in different OCs; airplane photos were shared in both professional and non-professional OCs; model collection hobby was shared with professional and non-professional friends. The participants of different OCs also overlap: professional users act as expert consultants in non-professional groups; hobbyists of airplane photo-shooting (Feiyou) share photos in

professional forums; aviation movies can also be shared with friends in OCs not related to aviation. Neither activities nor users in these OCs can be isolated from each other.

The user enjoyed his interest by sharing it in different ways (different activities and different OCs), and the user experience of each OC is connected. If we only consider his experience in one OC, for example, the professional forum, we may not recognize his need for the entertainment side like watching the movie with non-professional friends. What Allen experienced was not individual OCs or events. The combined experiences in different OCs, offline events, and other activities formed a holistic experience around his interest in aviation.

### 4.1.2. The OC of socialization

Another participant Brian made interesting use of OCs of interests. His interest in the OC is  focused on one goal, dating. For the duration of this research, all the OCs in which he participated in were related to this goal. Figure 8 shows the OCs and activities Brian participated that were related to his goal.

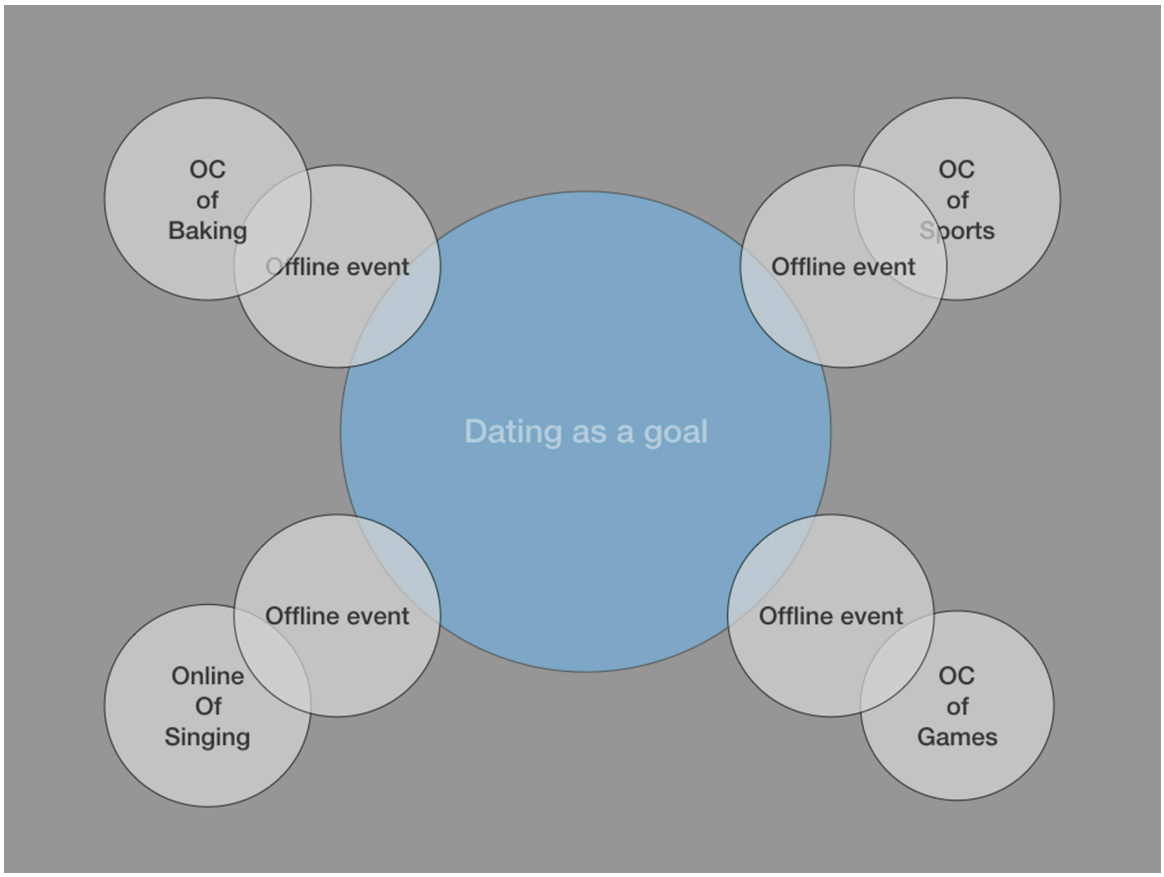



**FIGURE 8: PERCEIVED USER EXPERIENCE AROUND A GOAL**

Brian was a 27-year-old single young man. The researcher met him in a city hiking activity, where the researcher made a brief introduction to this research. He was active to engage other people. He was very frank and direct about his goal, "my goal is very simple and clear - looking for a date." He joined many different OCs' activities, baking, house parties, book clubs, and others. These OCs Brian joined have their own explicit purposes: sports, singing, playing games, etc., but Brian was not interested in the designed purpose of the OCs. His own goal was to meet people in these groups and get to know the girls he is interested in. So, his criteria for choosing an OC were " … whether the OC' activities can help (me) to know the characteristics of a person", and "face-to-face activities are the key criteria, because it's the best way to know a person". In this spirit, he focuses on the offline events organized by these OCs, instead of any specific OC. When asked about his experience in the OC, he talked about the face-to-face activities he attends. "a few of the events were ok. I met this girl in the baking event… I was happy with that event." "that OC

was boring. They organized the event badly. There was no game or activity to introduce people to each other. I only got to know two persons." It can be said that the user is not interested in any particular OC, but all the OCs serve his goal of meeting people.

At the introduction meeting of the research, after he was introduced to the study and probe kit (which included the assignment to draw a social map), he started drawing a very rough structure, which was later clarified and completed by the researcher and confirmed by the participant. Figure 9 below is the social roadmap made by Brian and the researcher in the interview, which may well describe Brian's experience in these OCs and events. (Figure 9 will be also be discussed about the third topic in the next section.)

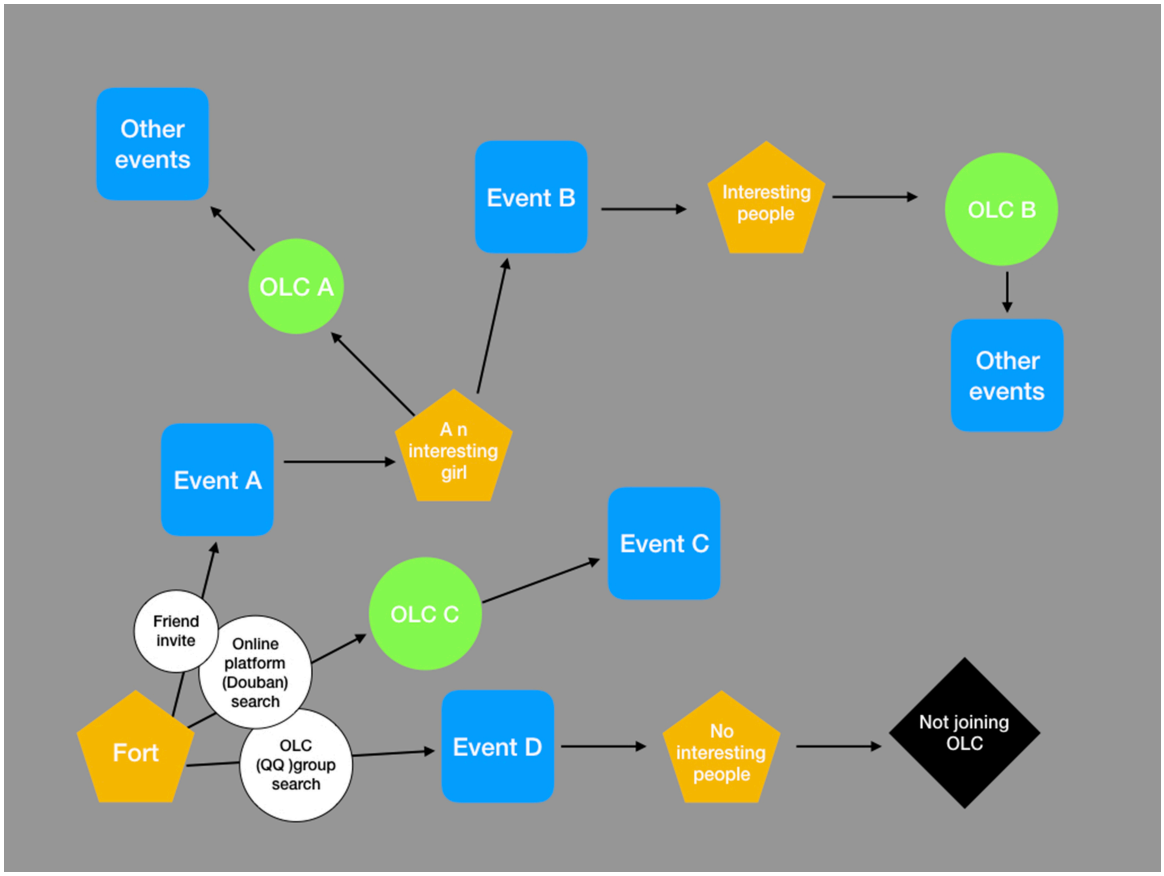



**FIGURE 9: SOCIAL ROADMAP**

Starting from about one and a half month ago, Brian decided that he spent too much time alone. The interaction he had had with other people was almost purely online, through

online games or WeChat groups. He then decided to get out to find dates. He started by looking for organized activities involving meeting people, mainly in three ways: asking friends about social activities, searching for organized activities on online platforms like Douban, and searching for OCs through online platforms like QQ. Then he attended the first event (event A) he found in douban.com, which was a baking lesson (event A) organized online but held in the real world. He met a girl he was interested in, so when the girl recommended another baking lesson which is organized by another OC (OC A), he was happy to join. In the 2nd baking lesson, he found out that the girl was not available, but he also met some other interesting people, so he joined this OC of interest (OC B). Later Brian then joined another offline event held by OC B, where he met more people, and was recommended about other events. This goes on and on for him. Brian said "Online information is not reliable. I ask people to recommend to me (of events)."

This social roadmap shows that multiple OCs were connected through some common participants, and Brian was introduced to each new OC through the previous OC. Offline events are strong connecting points for Brian to be connected to other users. Online interaction is another connecting point, but much weaker.

He commented on his experience about OCs in general "many of the events are boring. Sometimes you can meet interesting people." "I will keep joining these OCs. The events are not very good, but it's ok." Despite his not-so-kind comments about his experiences, he kept joining these kinds of OCs and activities. The general strategy of using these OCs and activities can meet his own purpose of meeting girls. "I want to know what events have more girls joining, then I will join. If you know some, please tell me." From Brian's comments, he experiences these OC activities around his goal. Good or bad experiences in a particular OC do not change his strategy to keep attending similar events.

## 4.2. Topic two: perceived successful OC experience

The probe instructions have asked participants to describe their best and worst OC experiences, and in the follow-up interviews, further discussion was made about their opinion of a successful OC or successful activities in the OC. The findings from these

materials showed how they define and measure success in the OC of interest, and their insights into the elements that may contribute to OC success.

First of all, none of the 5 participants were sensitive to the typical success factors on the system level of the OC, like critical mass, the usability of the website/app, sense of community, etc. "I don't know much if the OC is successful." (Calvin) "Some of them (seems to be) doing ok, since they keep organizing events." (Brian) Secondly, the participants view OC success through individual fulfillment instead of the group's collective achievement. Their personal proactive engagement seems to especially affect their sense of successful experience positively.

### 4.2.1.The OC of story-relay

Allen introduced the researcher to an unusual successful OC of interest. When he is asked to give some examples of successful OCs, he found it hard to define or to know if an OC is successful or not. So the researcher asked him to tell the OC he visits most. He enthusiastically introduced an OC of story-relay inside a music platform.

Netease music app is one of the three biggest music apps used in China. In Netease app, below each piece of music, there is a comments section, where the fans of that music comment and converse. For all its intents and purposes, it is a typical platform for OCs of music. One of the songs in this app, called Escape (远走高飞) has accumulated 34,876 comments. But the comments are not usual introductions or critiques like those of the other songs. They are a relay of fictional stories. Allen said it started because the song has a background story. Each follower writes a paragraph of a story as one character in that story, which sometimes is a boat, a stone, or a fellow singer. For example, one fan wrote "I'm the boat who went to send him away… I can't stop him from leaving… he is gone." and the next one wrote, " I'm a stone on an island. Seven years ago a boy came to this island. He sits beside me talking to a tree…" Each section is connected in some way, sometimes obvious, sometimes very obscure. It is one of the only two OCs of interests that he follows regularly. Allen is enthusiastic whenever he talks about it, and he also joined the story-writing. Figure 10 shows the screenshots of the app and the content of this OC of story-relay.

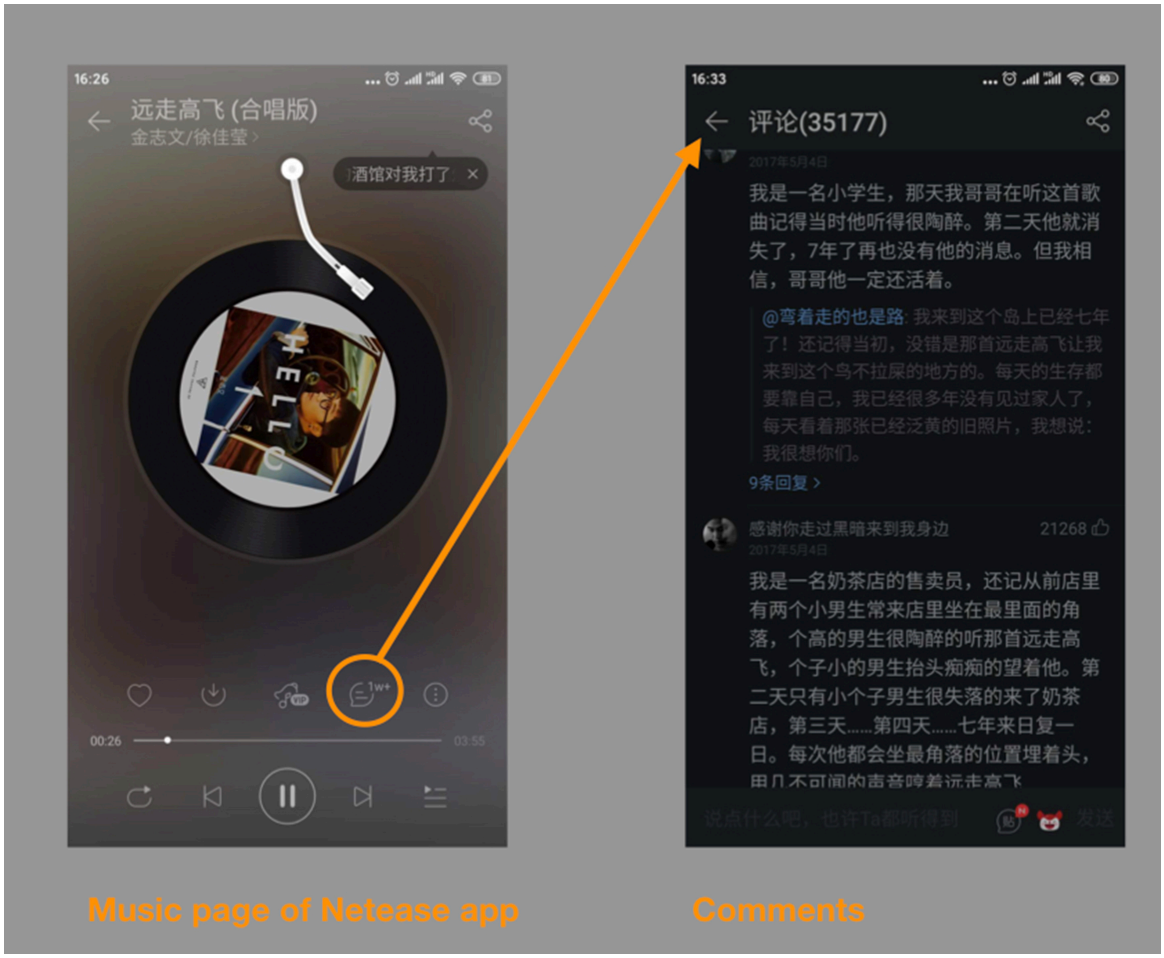



**FIGURE 10: THE OC OF MUSIC**

There are other OCs specifically for story writing or story relays, and there are a lot of other songs or music groups in Netease music app, which talk about music, critiques, singers, etc.. He can not explain why the fans of this song do such a peculiar thing, and he doesn't even know if there are other songs that have similar activities. It's not even uncommon for a song to have a background story like this one, but he never saw any other case like this. The researcher checked a popular song Danny Boy, under which fans also talk about its background story, but no one was writing a story.

Without further research, the researcher is not able to determine the reasons for the birth and flourishing of this OC. Though, Allen's explanation may provide some clues. Allen said that he never knew anything similar happen in any other places, maybe because people using Netease music has some similar characteristics for them to play this game together. This case is special because it seems as if the users created their own experiences

without the involvement of any kind of organizer. Allen's appreciation of this OC is closely related to the level of his participation. When he wrote, he was connected to the other members through the story.

### 4.2.2.The OC of aviation

Though the participants rarely defined the OC with the term success, their description of their best experiences may shed some light on their perspective on OC success. As discussed in section 4.1.1, Allen was a member of a few OCs of aviation. He has described several best experiences to answer questions in the probe. (The details of these descriptions can be found in section 4.1.1.) The most prominent one was the movie watching activities he had organized. In these activities, he acted as the one initiate the events. He contributed the most in these activities, comparing to other events where he was only a participant. Another one of the best experiences is where he was an active participant. He not only participated in the discussion in the Feiyou forum, but also gain the "guru" reputation with his professional posts and responses to questions. Other descriptions of good experiences were about sharing information in OCs.

From these descriptions, it seems that the more he actively participated in the activities, the more he appreciated the experiences. The level of proactivity is positively related to user evaluation of successful OC experiences.

### 4.2.3.The OC of socialization

When Brian was asked why he doesn't join the OCs specifically for dating if he was looking for a girlfriend, Brian said, "they (dating websites and app) are very fake. It's hard to get to know a person in those datings. In these OCs of interests (which held offline activities), you get to know people much better when you are doing activities, like sports, singing, playing games." So he chooses OCs which may provide him with opportunities to get to know people and girls.

Just as discussed in section 4.1.2, Brian views his experience in many OCs as a whole. He doesn't seem to be interested in the success of any OC. Brian's comments of the OCs focuses on individual events and individual persons, and his experience is defined based on

his interaction with them: "80% about girls, 20% about meeting other interesting people". Regardless of good and bad experiences, Brian upheld his strategy of participating in events of OCs of interest. OC success can be evaluated by the level of continuance intention of participants (Kang et al., 2018). In this sense, if Brian continues participating in OC's events, his experience should be considered successful.

## 4.3. Topic three - Offline and online interaction

Brian said that all OCs he joins held offline events, which is a critical determining factor for him, because he believes that face-to-face meeting with people is much more important than only communicating online. At the same time, if these groups do not have online presences, Brian would have little chance to join them, because his primary source of information comes from online.

As shown in figure 8, Brian's social roadmap is woven with online and offline experiences. OCs and the events they held served as his sources of information and primary connection points to other people. The pivoting point of each of Brian's experiences has always been a person or persons whom he met face to face.

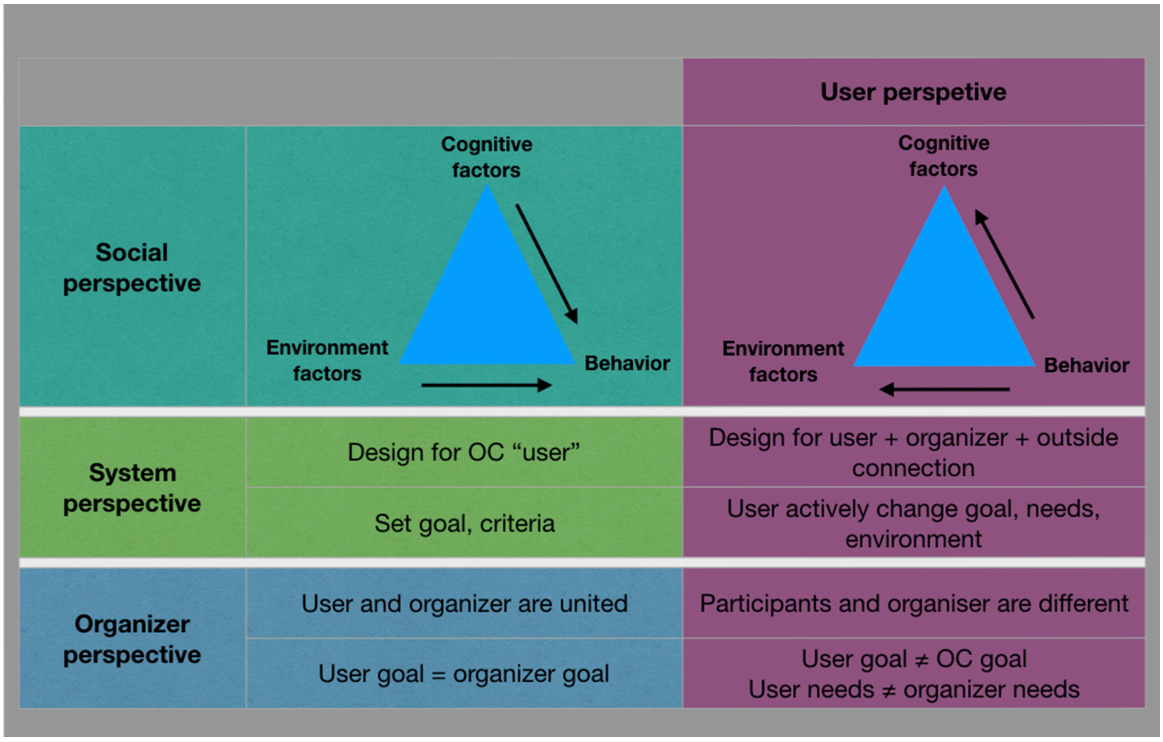
## 4.4. Discussion

Based on the research question "how users of the OC of interest perceive OC success through their own experiences?" and a review of existing literature, the research findings were grouped into three topics, in an attempt to answer the research question.

This research intends to complement the overall understanding of OC success by adding the user perspective. How OC success is perceived from the user perspective, and what are the key elements of a successful OC. As importantly, what new knowledge can be added to existing understanding from social, system, and organizer perspectives. From the user perspective, the OC is viewed as a part of the holistic experience. Good or bad experiences rather than OC success were evaluated in terms of meeting their needs.

This section discusses the findings by comparing the user's perceived OC success to other perspectives'. Table 1 below summarizes the differences between the user perspective and other perspectives.

**TABLE 1: COMPARISON OF THE USER PERSPECTIVE AGAINST OTHER PERSPECTIVES**




Details of these differences are discussed in the three sections below.

### 4.4.1.User v.s. social perspective

As discussed in the literature review chapter, studies from the social perspective see the OC as a social community, and focused on how personal and contextual factors affect users' behavioral consequences (Kang et al., 2018). Specifically, how self-efficacy, altruism, and identification (cognitive factors), trust, reciprocity, emotional ties and bond (relational factors), and group dynamics and member roles (structural factors) shape user behaviors (eg. knowledge sharing).

The findings of this research draw our attention to the reversed influence: users' proactive behavior in changing their social network and outcome expectation by making their own experience. Allen's best experiences he talked about were ones he actively participated in (posting, movie watching, etc). It can be argued that these successful experiences were shaped by what he does in the OC more than what the OC can do for him. In other words, the success is affected by the user's actions to make a successful experience. Brian's experiences also seemed to have little relevance to the success of a specific OC, since the result of attending multiples events can in the end meet his goal. The OC of story-relay, in which Allen and other users excitedly participated, doesn't seem to involve any organizer input. The users have developed their own common interest seemingly unrelated to the OC of music.

When Allen brought his friends from different OCs together for new events, he was both strengthening the existing social capital and creating new relational capital. As discussed in the previous section, from the user point of view, this proactive engagement is one of the most important parts of his OC experience.

Based on this understanding, this research suggests that studies from the social perspective may have underestimated the influence of user behaviors as social capital on the cognitive dimension. As a proactive resource, they can also strongly influence, change, or create social capital on relational and structural dimensions. Social capital exists through interpersonal relationships among individuals. In this research, because OCs around one interest or goal shared a group of users, the users' personal connections in one OC could be transferred to other OCs (Brian meet people in one OC and were introduced to other OC by them), so is their social capital. Previous studies have investigated the effect of social capital on knowledge sharing inside an OC. (Chang & Chuang, 2011) How the social capital transfer affects an OC and to what extent, has are yet to be researched.

### 4.4.2.User v.s. system perspective

The system perspective views the OC as an online system, which supports human activities within the community. In Delone & McLean's updated IS success model, the success of the OC system is defined in five categories, in which system design (decided by system

quality, information quality, and service quality) determines the interrelation of user satisfaction and intention of use which further lead to network benefit. In Preece's usability and sociability theory, one of the key measures of system success is the service to users' specific needs. As discussed in section 2.3.4, in the system theories, it is assumed that user needs are united and the owner or sponsor represents the interest of all users. Most of the studies did not distinguish organizers from participating users in the definition of "user".

The findings of this research showed that users can join an OC for a different goal from the organizer's, and the users' group goal can shift from the original goal through their own action. Thus, system design faces the question: whose needs the system is designed to serve?

One example of the dilemma is the connectivity of the system to the outside world. Studies from the system perspective focused on system design to meet user needs inside the OC. The connection between the OC and the outside world was not considered as an important success factor in previous studies. It is even suggested that a closed group helps to strengthen the sense of community. But this research found that the users' view of one OC's success is closely connected to other people and activities outside of the OC. This research showed that user experience in one OC of interest can be complemented by other OCs or activities around the same interest. This connection may be hindered or supported by system design, and consequently affect OC success. Based on this finding, the consideration for system design should not only be limited within an OC but also include connectivity with outside, even offline world. For example, sociability design could be extended to support not only user interaction within but also that with the outside of the OC.

### 4.4.3.User v.s. Organizer perspective

The organizer perspective views OC success as meeting a group goal or user needs. As discussed in section 2.3.3, these studies often assume the organizer's as the group goal. To meet this goal, user engagement is considered a key success factor. However, the social dilemma theory has pointed out that individual needs could conflict with the goal of the OC as a whole (Kollock, 1997). The research findings showed that this dilemma may exist

in two ways. The first is that user needs are complex and contextualized, a simply assumed goal by organizers may not be able to represent the goals of the users. The second is that even if the group share an original goal, the users can actively influence OC activities to meet their own needs, or even change the goal of the OC through their proactive action.

Firstly, users like Brian may join an OC even if their goal is different from the explicit goal of the OC, as long as they benefit from some aspects of the OC. Brodie et al., (2013) have empirically identified in brand OCs that they could be engaged with different aspects of the OC, like brands, products, and services, as well as the community, and other community members. This research substantiated Brodie's proposal in the OC of interest. Based on this understanding, user engagement requires a better understanding of what aspects of the OC can engage users and in what way.

Users also join multiple OCs and activities to meet different aspects of their needs. For example, Allen's interest was seemingly aligned with the OC: a broad term, aviation. But each OC he attended has its unique features like photo shooting, as part of aviation. These unique features and their connection around aviation together form a complex solution for Allen's needs. These findings showed that user needs can hardly be defined or fulfilled by a group goal in an OC. Jung and Kang's (2010) study may point out a direction. They have introduced a hierarchical structure of goals (means-end chain analysis) to examine user goals in the OC.

Secondly, users' active influence on the goal of the OC were rarely discussed in previous studies. The findings of this research suggest that users' proactive actions may play an important role in creating their own experience, which may be strong enough to affect the group experience. In the OCs of aviation, the users created unique experiences of different aspects of their interest. In the OC of music, the users created a very different new goal for the group of users. This finding suggests that users' proactive action can be a determining success factor, which is worth further studying.

### 4.4.4. The importance of offline interaction

Previous studies have suggested that offline activities are an important factor affecting OC success. It was empirically verified that offline activities can contribute to OC success by directly affecting the user's sense of belonging, fostering social relationships, or facilitating the users' e-based economic transactions within the OC. Rothaermel & Sugiyama, (2001) suggested "…off-site communication is a stronger predictor of an individual's on-line purchases than on-site communication… " The findings of this research strongly support the importance of offline activities. For users like Brian, offline activities are the determining factor that whether he would join an OC in the first place.

## 4.5. Challenges and opportunities of design probe in user experience research

The applications of design probe in the research of user experience outside of design researches are few. It serves two purposes to discuss the challenges and opportunities in the application of this research method. The first is to evaluate the effectiveness of design probe method for the purpose of collecting in-depth information about user experience in this research. Secondly, discussing the details of the research process is also a way of increasing the credibility of the research. (Creswell, 2016).

One of the biggest challenges is the design of a probe kit. The probe design was challenged constantly at the recruiting meetings. The design was modified, and new tools were added during the process, to reflect the feedback from participants. At the beginning of the probing, among the first three volunteers, two explicitly expressed that they prefer to use online tools to keep their diary, since they were "already used to keeping a diary/notes that way (digitally)", "Writing seems to be too much trouble. Audio recording on my mobile phone is much more convenient for me, since I can do it any time I when I think of something". Another volunteer shared the same concern and also prefers to use audio documentation. The e-diary has all functions of the designed probe kit. In the end, the participants returned probe materials in several different forms that they preferred.

The photograph task, postcards, and stickers were meant to provoke inspiration and creativity (Gaver et al., 1999) in the documentation. The digital ways of documentation may risk lacking inspiration and creativity. Though the main purpose of this research is to collect information instead of inspiration, aesthetic inspiration is considered not as important (Hemmings et al. 2002). On the other hand, design probe emphasizes users' active participation (Mattelmäki, 2006). The negotiation of documentation form between the researcher and the participants serves well to the purpose of active participant engagement. This engagement allows more participants to be able to participate in this probe, and may allow them to document more useful information if it's more convenient for them.

In this research, the documentation provided details of participants' activities, while interviews produced more in-depth understanding and insights both from the participants and the researcher. Most design probes conduct one follow-up interview at the end of the probing process (Mattelmäki, 2006). This research argues that interviews may play a stronger role in inspiring participants to reflect on their experience, and then provide more valuable information in future self-documentation. So the researcher is suggesting, for the design probe process for informational purposes, to add at least one more interview in the middle of the documentation period, which may notably improve the quality of the probing material.

During the research, people were more than happy to talk to the researcher, while they were more hesitant to express novel ideas in the documentation. So interviews produced more meaningful information than their documentation. In Brian's interview, he was hesitant to draw the social roadmap. He started with two circles and two lines, then stopped. When the researcher encouragingly asked him "this looks interesting, is this…?" "Do you mean …?", he became more excited, and started to explain more and more.

Applying design probe method, the researcher has effectively achieved the research goal in terms of collecting rich, in-depth information and gain a deep understanding from the user perspective. The research recommends the use of this method in future researches of user experience. Though, the tools intended to facilitate inspiration and creativity were not well

utilised. Also, adaptation is suggested to be made to improve the quality of the participants' documentation.

## 4.6. Conclusion

This chapter first presented the qualitative research findings in three topics, and discussed the implications of these findings by comparing them to the theories and success factors from social, system, and organizer perspectives.

The first topic discussed how users define OC experiences through their experiences. It showed that the user experience of one OC is inseparable from other activities. The user participates in multiple OCs or activities of the same interest, and their description of the experience is a holistic experience combined with different OCs, offline events, inter-personal communications, and personal activities. The second topic discussed successful OC experiences and the elements affecting user experience from the users' point of view. The user's measurement of successful OC experience is not necessarily aligned with the designed purpose of the OC. The users can define their experience through their interaction and their initiative activities, regardless of the purpose of the OC. Users can even create their own experiences despite the OC. The third topic shows that offline meetings have a strong influence on the relationship of OC users, as well as on the user's evaluation of OC success.

By comparing with other perspectives, this chapter suggested a few areas where the user perspective can complement or challenge existing theories and success factors. This research suggested that studies of the effect of user behavior on the environment and outcome expectations are insufficient, since the findings show that user behavior can actively change group experience in an OC. For studies from the system perspective, this research presented a challenge for the application of the theories. Because organizers may not share the same goal as participating users and the group goal can shift over time, further clarification of the target users is needed in order to design to support "user needs". From the organizer perspective, the research findings first challenged the assumption that the organizers' goals represent the users' goal. The findings also showed that users'

initiative action can be a determining success factor of the OC, which was seldom researched.

In general, the research findings showed that user needs and goals in the OC are more complex than perceived in studies from other perspectives, and users' proactive action can have a much stronger effect on OC success than previously discussed.

# 5. Conclusion

This chapter first summarizes the research and research findings. Then the implication and limitations of the research are discussed, and in the end, suggestions for future studies are made.

## 5.1. Research summary

The OC plays an important role in modern life. The topic of OC success has drawn the attention of researchers, practitioners, and users. The literature review has shown that researches of the OC have extensively focused on social, system and organizer perspectives, but less attention was paid to the user perspective, while the user's role is one of the key elements to OC success. Aiming to gain a better understanding of user experiences in the OC, the research question "how users of the OC of interest perceive OC success through their own experiences?" was raised. This research adopted design probe method to explore user experience in OCs of interests in China. The research probed into seven participants' daily lives related to the OC of interest. Rich data of participants' activities, thoughts, emotions, and their contextual information were collected. The researcher gained a deep understanding and insights into the OC experience through the user perspective. In chapter 4, this thesis discussed research findings through three topics relevant to the research question, the comparison of different perspectives, and challenges of the probing process. In design probe, there does not exist a single explanation of the original data, instead, rich and in-depth descriptions of the stories and their context are made, so that different readers of the research can make their analysis of the material, and draw their own conclusions.

## 5.2. Managerial implications

The purpose of this section is to demonstrate the possible practical value of the research findings to the organizers and designers of the OC of interest.

Firstly, the findings suggest that organizers and users do not necessarily share the same goal. In the pursuit of user engagement, instead of promoting one simple goal, the

organizers could consider what aspects of the OC can meet the more specific needs of the users, for example, some users may join the OC for its natural attribute of socialization, and some join for the specific interest.

Secondly, research findings showed that user experience may be strongly affected by factors from outside of the OC. OC organizers and system designers work on the premises of the OC they are connected to. The measurement of success is often based on the evaluation of criteria within this OC too. There are two implications worth considering for the organizers of the OC of interest. One is that there could exist determining success factors from outside of the OC, like user interaction in other OCs. The organizers could make use of these factors to their advantage, for example, consciously introducing other OCs or activities that can complement their own goal. For system designers, it is necessary to balance the need for a closed environment for the sense of community, and the need for connectivity with the outside world.

Thirdly, research findings suggest that users' action could affect their own experience or even the group experience of an OC. The organizer can encourage and facilitate activities initiated by users, which would positively affect user experience.

This study also provides practical value by providing rich and in-depth material from the user perspective, which hopefully gives the OC organizers and system designers a better understanding of user needs and user experience. This information was discussed in detail in the findings chapter.

## 5.3. Limitations

This section aims to outline the limitations of this study as a reflection as well as a measure to increase the research credibility. Despite the rich and inspirational findings, the use of probes has not been problem-free. There are three major concerns which may limit this research.

The first limitation comes from the nature of the research method. Design probe was originally a design research method. The applications of design probe for the purpose of collecting information are few. The reliability of the material and its interpretation are

challenges for probe studies. In finding out about people's experiences and feelings, the reliability of the results depends on both the honesty of the storytellers and the researcher's ability to record the material (Mattelmäki, 2006). This research is limited by the researcher's capability and experience. She is neither a professional researcher nor a professional designer, and has limited experience in conducting user researches or design probe. This may hinder the research in the respects of extracting and interpreting meaningful information from the participants, and the aesthetic design of the probe kit.

The second limitation is due to the scale of this research. This study was based upon a small sample of students and thus any generalization from the findings reported from this context should be made with caution. These findings may be limited to this specific context. These interpretations are shared in hopes that they might be of some value in informing and inspiring further researches of user experience in the OC. The time of the probe is limited to two weeks. Since OC activities often happen in the weekend, such a short period may have difficulty to reveal routines of users' practices. The number of participants is only seven. The small number of samples and the qualitative nature of the design poses challenges to the generalization of the research results.

Lastly, returned probe materials and interviews supplied rich information, but one issue remains unsatisfactory. The photograph task, postcards, and stickers are meant to provoke inspiration and creativity (Gaver & Dunne, 1999), but very few image material was used by the participants. Brian had hesitantly drawn the first two circles of his social roadmap before he stopped, because he "didn't know how to draw this". It poses the question if these tools have fulfilled their designed purposes. The reasons why participants are reluctant to use visual tools are left to be uncovered.

The research findings are limited in the scope of OCs of interest, because the type of OC has been proven to be relevant to the success conditions.

These limitations may leave room of the research results for argumentation. Never the less, the application of design probe in the informative research of user experience, and the rich and in-depth materials collected are valuable for both practice and academic studies.

## 5.4. Future research avenues

This research is an explorative and informative qualitative research. Academically, it aims at exploring the user perspective of OC success through their experiences, as well as suggesting new research methods for the study of user experience in the OC. The research findings are suggesting a holistic view of user experiences.

For future study, this thesis first suggests that more studies of user experience of the OC to be conducted with a holistic view to include different experiences surrounding their interest or goal. These research findings are limited to the OC of interest, thus researches of user experience in other types of OCs are needed to draw general conclusions. The researcher also calls for more user experience research in different cultural contexts. "Cross-cultural online community research can support theoretical generalizability, increase methodological robustness and give insights into user online behavior." (Gallagher & Savage, 2012)

The research finding shows that users' goals and the organizers' can be very different. But this research was not able to systematically identify the exact differences between the user's and organizer's perspectives, or how their perspectives are related. To achieve OC success, users' needs and organizers' should be synergized, thus the understanding of the exact differences of the organizer perspective and the user perspective is vital. The researcher suggests future studies to establish a clearer definition and measurements of OC success from the user perspective.

Regarding the research method, this study suggests researchers of OC user experience to utilize methods which explore deeper into user experience. Our understanding of user experience is incomplete, fragmented and far from satisfactory. Quantitative research and traditional qualitative research methods like survey, questionnaire and interview accumulate mass data. They are more useful to verify the known success factors. To explore the unknown information of user experience, it calls for more explorative research and more application of user-centered research methods like design probe.

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# APPENDICES

## Appendix I: Probing schedule

Probing schedule

| Group | Researcher initiated events in Douban, and a Wechat group: 网络社群研究 | | | LOHAS Club 乐活财商俱乐部 | Chongqing Leisure WeChat group重庆一起耍 | AT English corner WeChat group | | Love mules WeChat group 爱之驴 | Green master and doctor | Fundvengers | Slow Life | Mountain Afar | Meetu |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Purpose of OLC | Discussion group | | | Lifestyle | Social meetup | Learning English | | Hiking | Learning | social meet up, | lifestyle,, | hiking | discussion |
| Number of members | 5 | | | 222 (recruiting in offline event of 21 members) | 58 | 47 (recruiting in offline event of 6 members) | | 155 | 415 | 156 | 421 (recruiting in offline event of 8 members) | 106 | 41 |
| 20190711 | | | | | | Join Douban event and meet 蹦哒吧-茶友会 小珊儿 | | | | | | | |
| 20190831 | Douban Event posting | | | | | | | | | | | | |
| 20190913 | | | | | | | | | Posting in Green master and doctor, 绿色硕博 | | | | |
| 20190914 | Build wechat group for Douban event | 西江月 join wechat group through Douban | | | | | | | | | | | |
| 20190915 | | | | Invited by 小珊儿 to join hiking, but not joining wechat group | | | | | | | | | |
| 20190917 | | | | Join hiking event and a temporary wehcat group for hikers only; recruit received 3-4 volunteers but lost contact | | | | | | | | | |
| 20190917 | | | | Invited by 小珊儿 to join 乐活财商俱乐部 wechat group | | | | | | | | | |
| 20190919 | | | | | Invited by 随风飘瘾 to join 重庆一起耍 wechat group | Invited to event | Face to face recruit; Torro & Eason volunteered | | | | | | |
| 20190920 | Suzy join wechat group through Douban | Ask to post in 乐活 group, & was denied, but Fort saw it and volunteer | Fort join, Fort invites 随风飘瘾 and Flash fisher to join | | Posting recruit | | Self-documentation start; Torro question | | | | | | |
| 20190921 | Douban event | 随风飘瘾 & Fort join; interviews conducted; only Fort volunteer for design probe | 西江月 not responding, Suzy cancelled | | | | | | | | | | |
| 20190923 | Jessy C. Join | Fort start documentation | | | | | | | | | | | |
| 20190926 | XX青年 join wechat group | | | | | | | | | | | | |
| 20190927 | | | | | | Join event; Invited to wechat group by Eason | Eason 1st Interview | | | | | | |
| 20190928 | XX青年 join event, but not volunteer | End of documentation; Interview conducted | | | | | | | | Posting in Fundvengers, 傅筹者联盟 | Posting in Slow Life Wechat groups慢生活 | Posting in Mountain Afar Wechat groups 远山 | |
| 20191003 | | | | | | | Last day of Eason documentation | | | | | | |
| 20191004 | | | | | | | Eason 2nd Interview; last day of Torro documentation | | | | | | |
| 20191006 | | | | | | | | Recruit; 萧萧, 颜宇, 听雨, Abby volunteered | | | | | Posting in Meetu Wechat group圆桌知识分享群 |
| 20191007 | | | | | | | Torro interview | Start documentation | | | | | |
| 20191021 | | | | | | | | Last day of documentation | | | | | |
| Notes | No participant | 1 participant | No participant | No participant | No participant | | 2 participants | 4 participants | No participant | No participant | No participant | No participant | No participant |

# Appendix II: Instructions of the probe kit

Introduction

This is a research project of my master degree thesis. It is about people's experiences with OC of interests. I designed this probe to have a documentation of your personal experiences while using OC or related to OC. This documentation is to last 2 weeks, and a follow-up interview will be arranged to further my understanding about your documentation. Please find attached the Letter of Consent if you plan to participate.

This kit includes a piece of instruction paper, a diary book, stickers, a map, a set of postcards, and an envelope.

Participant actions

Take the probe kit home and complete the assignments below.

Open the envelope at the back of the book when 2 weeks of diary is completed.

Return the kit in 2 weeks by post.

Contact me if you have any question.

Assignments:

Please keep a diary for 2 weeks about anything related to the OC of interest you joined, including online and offline activities.

Please make use of the tools provided to help you document your activities, thoughts, emotions etc in the diary.

You are encouraged to take photos or screenshots to help you to express yourself in the diary. You can print the photos and attach them in the diary, or send the digital photos to me and I can print them for you.

Please draw a map of the relationship of you with other members of the OC.

Please answer the questions on the postcard when it feels applicable to your situation.

# Appendix III: Letter of informed consent

**Letter of Informed Consent**

**The Name of Study:**

A probe into user experience in OC of interest

**Researcher:**

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**Supervisor:**

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**Participant to the study**

Name:

_____

Email:

_____

Phone:

_____

Company:

_____

Position in the company:

_____

Game to be discussed:

_____

**Purpose of the Study:**

OC has become an increasing important part of our social lives. OC of interest is especially common for us to share information, to meet people or to spend our leisure time in. Previous studies have showed that user satisfaction plays a very important role in OC success, yet our understanding of user experience in the OC is limited.

This probe is designed to gain more information and deeper understanding about user experiences in OC of interest. The participants of this probe is asked to complete a series of tasks through self-documentation, with the help of various inspirational tools. The researcher also seeks new insights through follow-up interviews with participants. This study will provide new insights and inspiration into the OC success through user perspective。

**Study procedure:**

Participants: The unit of analysis in the study is the user of OC. To ensure the reliability and validity of the study, the participant should currently be an active member of an OC of interest.

Probe process: A probe kit will be given to each participant. The participant is to write a diary and to complete a few other assignments, in regard to their activities and thoughts of OC of interest. This self-documentation will last two weeks, and follow-up interviews will be conducted after the documentation are collected.

Recordings: In order to facilitate the analysis, and to ensure the validity and reliability of the research, the interview will be recorded. The recordings will be transcribed by the researcher. Unless the participant indicates otherwise, quotes from the interviews may be used in the following publications to illustrate the cases.

Storing data: The data gathered will be stored password protected on the personal computer of the researcher. The data will not be given to third parties without explicit consent of the participant. Third parties do not include Aalto University employees who are evaluating the research.

Use of the data: The information gathered in this research is gathered for the master's thesis of the researcher. Once finished, the master's thesis will be published digitally and as a hard copy. The data may be used in future publications unknown at the moment.

Compensation: The participant is not compensated for their participation in the study.

Ethical concerns: The largest concern for the participant regards confidential information. This is managed by voluntary participation throughout the study: the participant may choose how and which questions they answer, and they may withdraw from the study at any point.

Independent research: This research is independent, and not commissioned by any entity of business. The researcher is not working for any company.

**Confidentiality:**

The participant may take part in the study anonymously. The decision regarding anonymity does not impact the research process. If the participant chooses to be identified, their names may be used to illustrate the case examples in the research and publications. The participant is asked to indicate their decision by circling one of the options below. The participant may change their answer at any point without giving a rAllen.

The company and the game may be identified in the research Yes No

**Voluntary participation and withdrawal**

Participation in the study is completely voluntary. Should the participant agree to the study, their willingness is indicated by signing this letter. At any point of the research, the participant may withdraw their consent. They do not need to explain this decision. If the

participants withdraws from the study after being interviewed, their data will be retracted from the study and destroyed.

**Contact information**

Any questions or concerns regarding the study before, during, or after the interview, can be addressed to the researcher. If there are questions or concerns regarding the research that the participant would like to discuss with another party, they may also contact the research.

**Informed Consent**

By signing this from, the participant indicates they have read the information above and that their  participation in the study is voluntary.

There are two copies made of this document, one for each party.

| | |
|---|---|
| _____ | _____ |
| Date | Signature of the participant |
| _____ | _____ |
| Date | Bingxin Wu, researcher |